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DSH ABSTRACTS

HEARING

Anatomy and Physiology

1. CASORATI, V., and GRIPPAUDO, M., Modificazioni istologiche delle strutture membranose del labirinto anteriore indotte sperimentalmente da agenti di varia natura. (Histological studies on the anterior membranous labyrinth under different experimental conditions.) *Il Valsalva*, Rome, 35 (suppl. 3), 1959, 59 pages.

Rats and guinea pigs have been used for these purposes. Five groups of researches have been carried out: (a) Lead, quinine and streptomycin chronic poisoning. (b) A, B_2, B_6, C, E vitamin deficiencies. (3) Experimental diabetes, cirrhosis and protein deficiencies. (d) Cortisone treatment. (e) X-ray treatment. The labyrinths of guinea pigs treated with lead exhibited vascular changes, reaching sometimes hyalinosis, and perivascular infiltration by histiocytes, the spiral ganglion and Corti's organ also being affected. Regarding the labyrinths of the quinine-treated animals the authors' findings agree with those of previous authors who reported pictures of augmented perilymphatic pressure. In the streptomycin-treated guinea pigs pathological changes of the spiral ganglion and the organ of Corti have been found which were more marked at the first coil. In vit. C deficiency congestion and oedema were present, associated with altered positions of Reissner's membrane, suggestive of variations in the liquid pressure. In A, B_2, B_6, E vitamin deficiencies congestion took place; plasm infiltration, however, appeared in A-vitamin deficiency only. In experimental diabetes the spiral ganglion was slightly diseased. In total protein deficiency there was dissolution of Nissl's granules in ganglion cells, chromophyl cell boundaries in stria vascularis being not clear. In experimental cirrhosis the ganglion, stria vascularis, and spiral ligament have been found affected. In cortisone and X-ray treated animals the membranous labyrinth exhibited no changes. *(Excerpta Medica, XI)*

2. DE BOER, E., and SIX, P. D., The cochlear difference tone. *Acta oto-laryngol.*, Stockholm, 51, 1960, 84-88.

Differential electrodes were placed in the basal and apical turns of the cochlea of anaesthetized, adult guinea pigs. Animals were stimulated with two primary tones which were separated in frequency to allow for the desired difference tone. Cochlear microphonics detected from the basal turn were compared to those from the apex. The results show that for moderate levels of stimulation there is a cochlear microphonic for the difference tone which is distributed along the cochlea in the same manner as for a primary stimulus. *(R.C.B.)*

3. DUENSING, F., and SCHAEFER, K., Die aktivität einzelner neurone im bereich der vestibulariskerne bei horizontalbeschleunigungen unter bosonderer berücksichtigung des vestibulären nystagmus. (The isolated neuronal activity in the vestibular nuclei during horizontal angular rotation with special regard to vestibular nystagmus. *Arch. Psychiat. Nervenkr.*, 198, 1958, 225-252.

Microelectrodes were placed in different areas in the vestibular nuclei of 35 rabbits. Slight ether narcosis was used. The exact positions of the electrodes were controlled after the experiments by electrolysis. The animals were rotated horizontally, the elicited nystagmus being registered simultaneously with the neuronal activity from the vestibular nuclei. The results showed 4 different types of nuclear response to the rotational stimulus. The types were based on the findings of inhibiting or facilitating influences on the frequency of nystagmus. These factors were compared when rotating contralaterally or homolaterally with respect to the nuclear area to be studied. Furthermore, within each type there occurred frequency modulations of an inhibiting or facilitating character. Together with the 4 fundamental types, this gave 12 different functional patterns. Each nucleus could answer with any of these, but in varying quantities characteristic for each nucleus. The results illustrate the intimate

collaboration between the vestibular nuclei and the reticular formation, the latter representing the source of inhibiting and facilitating influences. *(Excerpta Medica, XI)*

4. GOTLIB, Ya. L., Morphological changes in the cells of the central cochlear and vestibular analysers in various acute and chronic nutritional disturbances. (Russian text) *Arkh. Patol.*, 21, 1959, 55-62.

The experiments were carried out in guinea pigs; 34 animals were subjected to acute total famine (with and without supply of water) for 3-10 days, 10 animals received an insufficient amount of food for 39-78 days. The cellular changes are very polymorphous: in the cochlear analyser they are more marked than in the vestibular analyser, and in the nucleus of the tuberculum acusticum they are more evident than in the central nucleus. The most marked changes of Snesarev's type were found in the tuberculum acusticum only. In the vestibular analyser the cellular changes were most evident in Schwalbe's nucleus, less in Bechterew's nucleus and only very slight in Deiter's nucleus. The dystrophic changes were severe in the cortical cells of the cochlear and vestibular analyser, both quantitatively and qualitatively. The different reaction of the various cells of the analysers is explained by their phylogenetic difference; older formations are considered to be more resistant to damage than younger ones. *(Excerpta Medica, XI)*

5. GRIPPAUDO, M., Il labirinto anteriore del ratto albino nella carenza sperimentale di vitamina E. Studio istomorfologico ed istochimico. (The anterior labyrinth in vitamin E deficiency. A histomorphological and histochemical study.) *Il Valsalva*, Rome, 35, 1959, 59-69.

A histological study was made of the anterior labyrinth in young rats kept for 60 days on a diet without vit. E. The animals to be studied were sacrificed at intervals from the 5th to the 60th day. Up to the 30th day of the deficiency no appreciable alterations of the membranous structures of the cochlea were observed. Thereafter, there appeared signs of congestion and a slight oedematous condition which manifested itself, however, only in an altered reactivity of the structures of the spiral ligament to the Schiff reagent. It is stated that the phenomena observed belong to the general picture of tocopherol deficiency, and that, therefore, vit. E. deficiency does not cause specific lesions in the anterior labyrinth of the rat. Application of this finding to man, in whom no clinical picture of vit. E deficiency is known, leads to the conclusion that the favorable action of vit. E in some forms of hypacusia of labyrinthine type is of pharmacological and not of vitaminic (substitutive) type. *(Excerpta Medica, XI)*

6. HUGELIN, A., et al., Tympanic muscles and control of auditory input during arousal. *Science*, 131, 1960, 1371.

A reticular stimulation producing a powerful arousal reaction decreases the potential in the cochlear nucleus evoked by a click. This reduction results from the contraction of the middle ear muscles, which lessens the pressure transmitted to the cochlea, and is not due to a direct neural inhibitory effect at the level of the first synapse of the auditory pathway. *(F.R.)*

7. KIETZ, H., Ein einwand gegen die wanderwellen im innenohr und eine abwandlung dieser theorie. (Objection against the theory of laterally extending waves in the inner ear and a re-orientation of this theory.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 295-300.

Objections are raised against the theory of laterally extending waves in the inner ear. The masking effect with a pure tone indicates that the amplitude of the vibrations of areas of the basilar membrane essentially associated with higher frequencies is much smaller than that of a lateral wave which must have extended along it. A new working hypothesis is put forward suggesting a surging wave in place of the lateral one, situated in the appropriate frequency band. The surging wave only vibrates that part of the basilar membrane corresponding to its own frequency, and thus the masking effect of a tone is confined to this position. The combined function of the basilar membrane and the membrana tectoria easily explains the ear's sharply defined sensitivity to sound in spite of the relatively wide area of the basilar membrane involved. *(Excerpta Medica, XI)*

8. KIETZ, H., Einschwingvorgänge auf der basilarmembran. (Vibration of the basilar membrane.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 393-400.

A new working hypothesis has already been described in previous publications, postulating that hearing is the result of the combined functions of the basilar and tectorial membranes. The basilar membrane vibrates according to its exciting frequency. The membrana tectoria is too unwieldy to be able to follow the frequencies, and is pushed aside by the vibrating basilar membrane, whence it exercises a steady gentle recoil pressure. Masking experiments are used to prove that the hitherto assumed laterally extending waves on the basilar membrane do not exist. Instead the formation of a wave surging upwards and in the appropriate frequency band is suggested. The energy for the upswing is provided by the flowing and ebbing endolymphatic stream. Such a surging wave could be built up on the basilar membrane within a few vibrations following the application of a tone. The rapid upswing is somewhat delayed because the membrana tectoria has to be displaced to the side by the surging wave. In the case of a sound of 80 db. intensity this takes about 100 msec. If, however, the membrana tectoria has already been displaced by previous stimulation, the wave on the basilar membrane is built up within fewer cycles. *(Excerpta Medica, XI)*

9. LAWRENCE, M., Acoustic effect of middle ear substitution. *Trans. Amer. Acad. Ophthalmol. Otolaryngol.* 64, 1960, 235-247.

The author has been investigating some of the problems arising from the surgical manipulation of the middle ear and reports a few of the clinically applicable results. Two questions are raised and are the subjects of this report: (1) What is the possibility of introducing auditory abnormalities through elimination of the middle ear by removal of the ossicles and the attached muscles? (2) What is the effect of the angle of force acting upon the oval window and the effect of mass upon a substitute transmission system? The general procedure employed the recording of cochlear potentials of cats in the presence of various middle ear alterations. The experimental procedure and equipment used in the experiments is described. The author concludes that creating a situation that removes the influence of the intratympanic muscles can create hearing anomalies that make listening unpleasant and loud sounds dangerous. Loss of these muscles may bring about the abnormal discomfort to sounds at moderate levels (occasionally called hyperacusis) often experienced by patients with stapedial paralysis. This effect may not always be seen in cases operated upon for conductive deafness because the resultant residual conductive loss may counteract the increase in sensitivity gained by cutting or by passing the stapedius muscle. However, loss of the muscle action does not remove support from the ossicular chain. If anything, freedom from the tension of muscles allows the chain to respond in a more linear manner to higher levels of sound, which permits the inner ear to overload at a lower sound-pressure level. The chain of bones does not, however, become 'sloppy' or tend to introduce distortion itself at an appreciably lower sound-pressure level. In procedures that involve the cutting of either one or both of these muscles, there is generally a rearrangement of the middle ear either by substituting a prosthesis for the stapes or altering the middle ear by removal of parts and replacement of skin flaps to satisfy the necessary acoustic principles. Experimental evidence indicates that the angle of application of force at the oval window is of little importance as long as it is free to vibrate. The experiments reported, although they have not recreated the actual surgical situation, indicate that within limits the weight of a prosthetic substitute for the stapes makes very little acoustic difference to the sensitivity to vibration of the middle ear structures. One of the more important relations is that of the tympanic membrane and the malleus. Lack of trauma to the fibers of the membrane and the presence of the head may be very important for the proper operation of these structures and such operations as fenestration may benefit by the presence of the head on the malleus, not only to provide balance to the repositioned tympanic membrane but to avoid the trauma occasioned by the head's removal. *(M.H.M.)*

10. LEGOUIX, J.-P., Le fonctionnement des fenêtres de l'oreille interne étudié au moyen de sons introduits directement

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dans la cochlée. (Study of the function of the windows of the inner ear by sound stimuli directly introduced in the cochlea.) *Rev. Laryngol. Otol. Rhinol.*, Bordeaux, 80, 1959, 353-365.

The microphonic response of the cochlea of guinea pigs has been recorded while introducing the sound stimulus through pipettes inserted into holes drilled in the scala tympani and scala vestibuli. This procedure has provided a means of investigating: (1) the importance of a release for the perilymph; (2) the effects of changes in the impedance of this release; (3) the phase conditions which occur when the ossicular chain is removed and when it is fixed; (4) some particular conditions of stimulation which occur after the fenestration operation and in some pathological cases. *(Excerpta Medica, XI)*

11. MACBETH, R., Some thoughts on the eustachean tube. *Proc. roy. Soc. Med.*, London, 53, 1960, 151-161.

Historically, according to the author, the eustachean tube was first described by Almaeon of Sparta about 500 B. C. Acquisition of knowledge about the structure since that time is reviewed by the writer. He then discusses the anatomy and physiology of the tube, its embryologic development, comparative anatomy, and histology. Specific features of tubes found in the human, the horse, sheep, cat, and porpoise are briefly mentioned. Finally a review is offered of clinical problems associated with human eustachean tube malfunction and its relationship to hearing. *(J.L.S.)*

12. McGILL, T. E., A review of hearing in amphibians and reptiles. *Psychol. Bull.*, 57, 1960, 165-168.

A review of studies concerned with hearing in two orders of the class Amphibia and three orders of the class Reptilia is presented. Knowledge of the structure of the auditory mechanism in these classes exceeds knowledge of the function. Presumptive evidence of hearing is obtainable from electrophysiological studies. However, proof of hearing can only result from some behavioral manifestation of the animals to sounds, either a natural reaction or a trained reaction. The behavioral evidence available indicates that adult amphibians—salamanders, frogs and toads—can hear. Among the reptiles, alligators and lizards can hear, snakes cannot, and the hearing of turtles is uncertain. The electrophysiological evidence indicates functional activity of the auditory system up to, and including, the sensory cells in every species tested. *(B.S.S.)*

13. PENNETTA, G., Le teorie dell'udito alla luce delle recenti acquisizioni di fisiologia. II. Le caratteristiche funzionali dell'appatato uditivo. (A) La capacità discriminativa di frequenza. (B) La capacità discriminativa di intensita. (The theories on hearing viewed in the light of the latest physiological findings. II. The functional characteristics of the auditory apparatus. (A) The frequency-discriminating capacity; (B) The intensity-discriminating capacity.) *Riv. Audiol. pract.*, Milan, 8, 1959, 103-133.

A discussion is presented of the arguments in favor of a spatial representation and sound frequencies in the organ of Corti. The author considers the various hypotheses advanced in order to determine what elements may play the part of resonator. Reference is made to the contrast between the high degree of muffling of the resonant system and the marked selective capacity of the sense organ, and to the results of investigations into the causes of these characteristics. On the basis of these data the hypothesis is formulated that the frequency-discriminating process, part of which takes place in the cochlear receptor, is finished by the nerve centers. Mention is made of the most likely assertions concerning the mechanism by which the intensity of the sound stimulus is assessed. A brief description is given of certain studies now in progress concerning cochlear interdependence. A hypothesis interpreting the result so far obtained is advanced. *(Excerpta Medica, XI)*

14. PROCTOR, C. A., The development of sensory cell innervation in the inner ear. *New Physician*, 9, 1960, 30-33.

Through the use of special silver stains in early stages of chick embryos and serial section of the specimens for microscopic study, an effort was made to determine the origin of the acoustic ganglion in embryonic development and the nature of the early innervation of the sensory hair cells. *(Author's summary)*

15. TONNDORF, J., Shearing motion in scala media of cochlear models. *J. acoust. Soc. Amer.*, 32, 1960, 238-244.

Békésy originally reported a shearing motion in the cochlea as the basis for stimulation of the hair cells. This notion is studied here with models patterned after those of Békésy. Details are given of the construction of artificial Reissner's membranes and basilar membranes. Results of this study are discussed. *(B.A.L.)*

16. TONNDORF, J., Dimensional analysis of cochlear models. *J. acoust. Soc. Amer.*, 32, 1960, 493-497.

Because different but essentially similar systems can be quantitatively related by dimensional analysis, such analysis was performed on cochlear models. On this basis, additional evidence is collected to support the view that the appearance of Békésy's eddies in the model is related to the appearance of audible distortion in the human ear. *(B.A.L.)*

17. WÜSTENFELD, E., Experimentelle untersuchungen zum problem der schallanalyse im innenohr. (Experimental studies on the problem of sound analysis in the inner ear.) *Z. Mikr. Anat. Forsch.*, 63, 1957, 327-387.

Membrane preparations of the organs of Corti of the guinea pig were stained with gallocyanin or carminic acid, and the number of swollen nuclei of hair cells was calculated. With low tones the nuclei swell in the apical part of the cochlea. With tones of increasing frequency the swelling migrates basally. The localization of such swollen nuclei coincides with that of degenerated cells in similar experiments of other authors. An increase in the intensity of a sound extends its reception in a basal as well as in an apical direction. A hair-cell nucleus can increase its volume by 6-8 times in 5 min. The volume returns to normal in 15 min. Astonishingly, the nuclear swelling takes place only on one side of the cochlea. Swelling of the nuclei usually occurs only in the outer hair cells, the nuclei of the inner hair cells remaining almost unchanged. *(Excerpta Medica, XI)*

18. WÜSTENFELD, E., and SPRENGER, F. H., Variationsstatistische untersuchungen an den sinneszellkernen des cortischen organs von meerschweinschen. (Statistical investigation of the variations in the nuclei of the sensory cells of the cortical organs in guinea pigs.) *Z. Zellforsch.*, 48, 1958, 720-734.

The volumes and surface areas of hair cell nuclei were studied: (1) in normal guinea pigs, (2) after acoustic stimulation with a frequency of 4000 c.p.s. (100 db.), and (3) after administration of streptomycin preparations. The results were analysed statistically according to the method of Daeves and Beckel. The results on surface and volume are represented in 3 numerical tables. The surface area values are expressed in 14 graphs, each of which contains one cumulative frequency and probability distribution curve of the entire nuclear population of internal or external hair cells and 3 to 6 curves representing component groups within this population. The numerical relations of the maxima of these groups which are thought to represent subordinate growth units, are given. The values of the increased nuclear volume in experimental animals depend on the initial magnitude and are equal for the medial and lateral rows of hair cells. They depend also on the quality of the tone and the duration of stimulation. The increase in the acoustic experiments exceeded 400%; after streptomycin it was only 14% less. *(Excerpta Medica, XI)*

Apparatus and Equipment

19. WEINREB, L., and TOUGER, M. L., Variation in ear protector attenuation as measured by different methods. *J. acoust. Soc. Amer.*, 32, 1960, 245-249.

For a given ear protector, the amount of attenuation is approximately the same regardless of which of three measures of attenuation is employed. There is a large difference between protectors, however, and the differences vary considerably from frequency to frequency. *(B.A.L.)*

Auditory Skills

20. WEPMAN, J. M., Auditory discrimination, speech, and reading. *Elem. Sch. J.*, 60, 1960, 325-333.

A definition of auditory discrimination is presented and examples are given. The terms 'phonetic,' 'phonemic,' and 'phonic'

are defined and illustrated. Auditory discrimination theory is discussed and present status of knowledge is elaborated. Essentials to development of auditory discrimination are mentioned. Audition and three sequential developmental levels of audition are discussed. Auditory acuity, ability of the central nervous system to extract and interpret meaning from transmitted auditory patterns, and auditory discrimination and retention are listed as the three sequential levels. Examples of each level are given. The misconception that the ability to hear is wholly functional as soon as it appears is discussed. Audition is described as a function in which all parts do not develop or function with equal facility. Mention is made of the ability to discriminate among regularly spelled sounds as being developmental in nature. This particular ability is in certain cases not fully developed until after six years of age. Ability to make fine aural discriminations of spoken sounds is not reached until seven or eight years of age. It is reported that approximately eighty percent of articulatory defects of childhood are attributable to poor auditory discrimination. A theoretical relationship between speech development and auditory discrimination is reported. As the ability to discriminate auditorially progresses, more speech sounds become available to the speaker. It is indicated that if such a relationship exists, auditory discrimination may be developing as late as the eighth year, and that speech correction for children with slowly developing auditory discrimination should not start until after the seventh year. A report is made of the results of the administration of the Wepman Auditory Discrimination Tests as these results relate to articulation, intelligence, and reading achievement level of subjects in the first and second grades. The results are interpreted as showing close existing relationships between auditory discrimination and speech accuracy of articulation, and between poor reading achievement and discrimination ability. Implications are that children be studied at beginning school age to determine whether auditory abilities have reached a level where the children can benefit from phonic instruction in reading or auditory training in speech. Also that children be grouped according to sensory modality which facilitates beginning reading instruction thus maximizing better developed modalities until the childrens' other developmental processes become balanced. Regarding speech therapy it is indicated that children in the beginning grades who have articulatory defects may be those with poor auditory discrimination. *(N.J.C.)*

PSYCHO-ACOUSTICS

21. AVAKYAN, R. V., Issledovania funktsii slukhovogo analisatora pri pomoschi migatelnykh refleksov v usloviakh proizvolnogo zadershivania migania. (Study of the function of the ear by means of eyelid conditioned reflexes under conditions of voluntary suppression of winking.) *Z. Vysshei Nervn. Deiat.*, Moscow, 10, 1960, 25-31.

A study was made of 10 subjects with normal hearing in terms of absolute and differential thresholds to a tone of 1000 cps by eyelid reflexes under conditions of voluntary suppression of winking. Suppression, when performed under the experimenter's instruction, did not affect the magnitude of the thresholds. When elaborating and stabilizing winking conditioned reflexes and determining absolute and differential thresholds, conditioned reactions of raising the eyelid were found, differing by their characteristics from winking reflexes. The conditioned reactions of raising the eyelid amounted to 41% of the total number of responses. The absolute and differential thresholds measured by eyelid movements (winking and raising reactions) coincide with the thresholds measured by the verbal response of the subjects. Conditioned eyelid movements can be used as a criterion of the function of the ear in cases of simulation or aggravation of deafness, and in organic hearing losses when the verbal response of the subject is unreliable. *(B.V.M.)*

22. ELLIOTT, D. N., STEIN, L., and HARRISON, M. J., Determination of absolute-intensity thresholds and frequency-difference thresholds in cats. *J. acoust. Soc. Amer.*, 32, 1960, 380-384.

Before undertaking a series of studies on the cochlea of the cat, normal frequency-discrimination thresholds were determined

over a large portion of the cat's auditory range. Thresholds were determined by the avoidance-conditioning procedures. The basilar membrane of the cat is approximately two-thirds the length of that of a human. The density of ganglion cells is greater in the cat than in the human, thus possibly explaining the animal's lower thresholds. The lower density of hair cells in the cat may explain its poorer frequency discrimination. Various experiences encountered in this study are discussed. *(B.A.L.)*

23. **FILIPPI, P., Sul significato delle risposte agli stimoli acustici impiegati nelle prove audiometriche alla luce delle concezioni neopavloviane sull-attività nervosa superiore.** (The significance of responses to acoustic stimuli used in audiometric tests, as seen from the point of view of Pavlov's theories on superior nervous activity.) *Arch. Ital. Otol. Rinol. Laringol.*, Milan, 70, 1959, 185-199.

Based on pavlovian and neo-pavlovian concepts on superior nervous activity, response reactions to acoustic stimuli used in different audiometric tests may be divided into: (1) unconditioned reflexes; (2) conditioned reflexes obtained by nonverbal reinforcement; (3) conditioned reflexes included in complex verbal stimuli. Among the latter, great interest attaches to the one obtained by the method of verbal reinforcement. Each one of these reactions has a particular significance in the general economy of superior nervous activity and in orientation as well as adaptation of the organism to the external and internal environment. Some of the data gathered in the literature justifies the impression that a comparative study of these three types of reactions by convenient observation methods might be successfully employed for some particular clinical problems concerning the investigation of the ear. *(Excerpta Medica, XI)*

24. **FLETCHER, J. L., and RIOPELLE, A. J., Protective effect of the acoustic reflex for impulsive noises.** *J. acoust. Soc. Amer.*, 32, 1960, 401-404.

Twenty-four male subjects were trained in the use of the Békésy audiometer. Then they were exposed to 100 rounds of machine-gun fire, both with and without a pre-exposure to a 1000-cps tone for activating the acoustic reflex. Pre- and post-firing audiograms, taken under both conditions, were compared to determine temporary threshold shifts. Shifts obtained with the reflex-activating tone were found to be significantly smaller than those obtained in its absence. *(Author's precis)*

25. **GOUREVITCH, G., et al., Auditory thresholds in the rat measured by an operant technique.** *Science*. 131, 1960, 1046.

A summary description is presented of the application of the Ratliff and Blough technique for auditory measurement in rats. Thresholds for a 2000-cy/sec tone were determined over a period of weeks. An ototoxic agent, Kanamycin, was then administered and changes in thresholds were followed. *(F.R.)*

26. **GREEN, D. M., Auditory detection of a noise signal.** *J. acoust. Soc. Amer.*, 32, 1960, 121-131.

Measurements of the detectability of a noise signal in noise are reported in this paper. Parameters of the noise signal such as the band width, duration, and center frequency are investigated. The results are compared with an optimum-detection model. For some constant detectability the equation generated by the model and one constant, an attenuation factor, closely fit the experimental data over the major range of the experimental parameters. The major area of discrepancy between model and data is the shape of the psychophysical function. Implications of the data for the critical-band mechanism are also discussed. *(Author's precis)*

27. **JERGER, J. F., TILLMAN, T. W., and PETERSON, J. L., Masking by octave bands of noise in normal and impaired ears.** *J. acoust. Soc. Amer.*, 32, 1960, 385-390.

The masking of sinusoids by three octave bands of thermal noise was measured in normal and hearing-impaired ears at each of two effective noise levels. For frequencies within the noise band results were essentially equivalent for all groups studied at either effective level. At the 30-db effective level, however, both presbycusics and sensorineural losses of presumably cochlear origin showed more masking than either normals,

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plugged normals, or conductives. *(Authors' precis)*

28. **KORNIENKO, A. A., O vlianii streptomitsina na slukhovuiu adaptatsiu.** (The influence of streptomycin on auditory adaptation.) *Vest. Oto-Rino-Laringol.*, Moscow, 22, 1960, 21-25.

The author's investigations demonstrate that streptomycin influences considerably the main index of auditory adaptation—the time of restoration of auditory sensitivity. The effect of streptomycin spreads not only on the peripheral receptor apparatus, but on the cortical portion of the ear as well. *(Author's summary)*

29. **LANGENBECK, B., Untersuchung der normalen und pathologischen hör-adaptation und hör-ermüdung.** (Normal and pathological hearing adaptation and hearing fatigue). *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 89-100.

The lowering of the threshold of hearing to high threshold stimuli and its recovery when the stimulation ceases were investigated with electronically controlled signals of brief duration. Two components were found to operate in the mechanism, viz. a rapidly acting 'adaptation' and a slower 'fatigue' component. The adaptation reaches its peak within 0.15 sec. and again recovers completely within 0.15 sec. of the cessation of the sound stimulus. Fatigue acts for a matter of minutes according to the type of stimulation. Fatigue may show pathological changes along with a normal adaptation, and an almost normal auditory threshold. It may be demonstrated that adaptation and fatigue have a different physiological mechanism. Fatigue seems to be determined by certain metabolic processes in the hair cells, while adaptation probably depends on mechanical alterations in the elasticity of the membrane tectoria or the sensory hairs of the organ of Corti. A simple and rapid clinical method of examination for clinical use is described. *(Excerpta Medica, XIX)*

30. **LAUDAŃSKI, A., Zjawisko elektrofoniczne przy stosowaniu zmiennego pradu elektrycznego u czowieka.** (Electrophonic effect of the alternating current in man.) *Otolaryngol. Pol.*, Warsaw, 13, 1959, 487-492.

The author examined hearing by means of stimulation of the skin of the head by alternating current. The frequency of the current used was 250 - 5,000 c./sec. The tone heard was in most cases twice as high as might be supposed. The loudness of the tone increased according to the intensity of the current. The analysis of the results shows that electrophonic effect arises above the endings of the acoustic nerve. The transformation of the electrical energy into mechanical vibrations takes place either in the skin or in the conducting apparatus of the ear. *(Excerpta Medica, XI)*

31. **LEGGET, R. F., and NORTHWOOD, T. D., Noise surveys of cocktail parties.** *J. acoust. Soc. Amer.*, 32, 1960, 16-18.

Several researchers were sent to cocktail parties to determine noise levels as a function of certain variables. It was found that in the formative stages of a party, sound power varies more rapidly 'than would be expected from a consideration of talkers as simple noise sources; evidently there is another, more important process involved. . . . The nature of the beverages served seems of minor importance. . . . Maximum levels observed were 80 to 85 db. These are not quite high enough to cause permanent impairment of hearing.' Furthermore, noise levels for all-male gatherings were slightly lower than for mixed gatherings: 'The sex differentiation is perhaps not large, but it is at least significant in view of general views on this debatable aspect of noise generation.' *(B.A.L.)*

32. **MEYER, M. F., Temporal irregularity of excitations: how much is accepted by the brain for reporting pitch?** *J. acoust. Soc. Amer.*, 32, 1960, 391-393.

For many years the only obstacle standing in the way of crediting the theory of the hydraulic-cochlea model as a hypothetical 'theory of hearing' has been the notion that the brain reports a pitch to consciousness *only* when it receives excitations from the auditory sense organ in strictest temporal *regularity*. The test of this notion has now been accomplished by experimenting with a siren—and the obstacle has been removed. *(Author's precis)*

33. **MILLS, A. W., Lateralization of high-frequency tones.** *J. acoust. Soc. Amer.*, 32, 1960, 132-134.

It has been recognized on the basis of previous research that localization of low-frequency tones depends on phase differences, whereas localization of high-frequency tones depends on intensity differences. The present study shows the relation between the discrimination of dichotic differences in phase and intensity and the discrimination of actual direction. *(B.A.L.)*

34. MISKOLCZY-FODOR, F., Relation between loudness and duration of tonal pulses. II. Responses of normal ears to sounds with noise sensation. *J. acoust. Soc. Amer.*, 32, 1960, 482-486.

Investigations of threshold change as a function of various durations of a tonal pulse indicate a reduced rate of threshold change and a shortened time threshold for noise as compared with normal values for a 1000-cps pure tone. This result is explained by the increased loudness level of low noise intensities, and supports the concept of a direct relationship between loudness and time threshold. However, this relationship is modified as the frequency distribution of the test tone changes noticeably with shortening of pulse duration. *(Author's precis)*

35. MISKOLCZY-FODOR, F., Relation between loudness and duration of tonal pulses. III. Responses in cases of abnormal loudness function. *J. acoust. Soc. Amer.*, 32, 1960, 486-492.

The previously determined relation between time-threshold and loudness is investigated in cases of abnormal loudness response. General principles concerning the nature of the altered function are established in pathologic cases with complete recruitment by time-threshold measurement and by binaural loudness matching. . . . The significance of time-threshold determinations and the limitations in their practical applicability for loudness measurements are discussed. *(B.A.L.)*

36. MOLLER, A. R., Improved technique for detailed measurements of the middle ear impedance. *J. acoust. Soc. Amer.*, 32, 1960, 250-257.

An apparatus is described for measurement of the acoustic impedance of the middle ear at the tympanic membrane. The measuring technique offers a possibility of studying the fine structure of the middle ear impedance, which contains not a single but several resonance peaks. . . . The results of measurements on eight normal subjects are presented, in part as impedance, in part as admittance. The admittance is measured for 50 cps intervals in the frequency range from 200 to 2000 cps. The individual spread of data proved to be very great and appreciably greater than the difference between the two ears of a single individual. *(B.A.L.)*

37. POLLACK, I., RUBENSTEIN, H., and DECKER, L., Analysis of incorrect responses to an unknown message set. *J. acoust. Soc. Amer.*, 32, 1960, 454-457.

The incorrect responses of listeners to an unknown message set of 144 words, presented in noise, were analyzed. Attention was focused upon the word-frequency distribution of the incorrect responses and upon the proportion of the incorrect responses that were nonsense responses. Both measures were affected by the speech-to-noise ratio, but were approximately independent of the stimulus-word frequency. *(Authors' precis)*

38. TANNER, V. K., and MÜLLER, A., Über das verhalten der tiefen frequenzen bei der hörermüdung. (Concerning the relation of low frequencies to aural fatigue.) *Practica Oto-Rhino-Laryngol.*, Basel, 22, 1960, 123-130.

An investigation was carried out in 30 patients concerning the effect of aural fatigue by means of pure tones (intensity 10 db, duration 3 and 6 minutes) on the threshold of the lower notes. In some cases a definite improvement occurs, especially for the frequencies 250 and 500 Hertz. Similar improvement for the low frequencies occurs by stimulation with 4000 Hertz, but not with 1000 and 2000 Hertz. There is a definite relationship between this improvement and the duration of the fatigue. The possible reasons for this peculiar relationship are discussed. *(Authors' summary)*

39. WARD, W. D., Latent and residual effects in temporary threshold shift. *J. acoust. Soc. Amer.*, 32, 1960, 135-137.

Three experiments designed to examine latent effects of low noise-level stimulation

gave completely negative results. It is concluded that noises that do not themselves produce TTS (temporary threshold shift) have no effect on the growth or decay of TTS produced by higher level exposures. *(Author's precis)*

40. WARD, W. D., Recovery from high values of temporary shift. *J. acoust. Soc. Amer.*, 32, 1960, 497-500.

Twelve normal observers were exposed to noise that produced at least 50 db of temporary threshold shift (TTS) measured 2 min after cessation of the noise. The TTS was measured at regular intervals until recovery was complete. Results indicate that while the recovery from these high values of TTS proceeds as a function of the logarithm of time during the first few hours, later recovery is instead linear in time. *(Author's precis)*

41. WARD, W. D., GLORIG, A., and SELTERS, W., Temporary threshold shift in a changing noise level. *J. acoust. Soc. Amer.*, 32, 1960, 235-237.

When an individual is exposed first to a high-level noise H for a time T and then to one of lower level L for time t, his temporary threshold shift (TTS) is equal to the numerical sum of (1) the TTS in db that would be produced by level L acting over a period of time $T + t$, and (2) the TTS in db that would remain after t min of recovery in quiet from TTS_q, where TTS_q is the difference between (a) the TTS at the end of the T-min exposure to H and (b) the TTS that would have been produced by T min of exposure to L. It appears that this result rules out any simple explanation of TTS. *(Authors' precis)*

HEARING DISORDERS

Audiometry

42. CASPERS, V. H., LERCHE, E., and PLATH, P., Über die abhängigkeit des hörschwellenschalldruks von der tondauer bei verwendung von kurztönen verschiedener frequenz. (Concerning the dependance of sound pressure at threshold on the duration of the tone when using short tones of different frequencies.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 39, 1960, 7-15.

In persons with normal audiogram the correlations between the duration of sound and the sound pressure at the threshold of audition was investigated. The ear was stimulated with short acoustical signals of different frequencies free of interference. The results were: (1) The minimal sound pressure necessary to produce auditory sensation (auditory threshold) rises progressively when the duration of the sound is shortened below the critical level of about 500 milliseconds. (2) The level of the auditory threshold depends upon the frequency of the sound. The lower the frequency the higher is the auditory threshold. The significance of the results of this investigation is discussed, especially its value for measuring adaption ability and in noting improvement of the auditory threshold. *(Authors' summary)*

43. DIEROFF, H. G., Zur eichung der reintonaudiometer unter besonderer berücksichtigung der akustischen eigenschaften verschiedener kopfhörerformen. (Standardization of the pure-tone audiometer, with special reference to the acoustic characteristics of various types of headpieces.) *Arch. Ohr.-Nas.-u. Kehlk.-Heilk.*, Berlin, 174, 1959, 103-109.

Difficulties in the standardization of audiometers are discussed. Personal acoustic investigations revealed considerable deviations in sound producers and headpieces. It is maintained that the Beyer headpiece type DT 48, with a flat rubber sleeve in accordance with DIN specifications, has considerable advantages. Whenever such a device is not available, standardization should be carried out with the aid of selected subjects familiar with the investigation and aged 18-25. In this manner, the acoustic difficulties are most easily overcome. *(Excerpta Medica, XI)*

44. DIEROFF, H. G., Über die Beziehungen zwischen Ton und Geräusch in ihrer gehörschädigenden Wirkung. (The relation between pure tones and noises in their injuring effect on the hearing organ.) *Arch. Ohr.-Nas.-Kehlk.-Heilk.*, Berlin, 174, 1959, 243-252.

The traumatic effect of sounds on the hearing organ depends not only on their intensity but also on their spectra. The impact of a pure tone or a noise with small frequency range hits only a small area of

the membrane of Corti, while the same sound pressure in the case of a white noise is spread over the whole membrane. The difference in injuring effect is clearly demonstrated by the determination of the adaptation residue, which is higher for pure tones of high intensity than for white noise at the same sound pressure. Conformable to the values for pure tones were those for noises with a small frequency range of about the critical width. This was shown by comparing the adaptation residues after exposing the hearing organ to a pure tone of 800 c.p.s. and again to a noise with a spectral width of 800-1000 c.p.s. at 98 db absolute during 3 or 5 min. *(Excerpta Medica, XI)*

45. FEINMESSER, M., BAUBERGER-TELL, L., and BILSKI-HIRSCH, R., A hearing survey in the public schools of Jerusalem. *Israel Med. J.*, 18, 1959, 59-63.

The total number of children with hearing loss was 159 (3.08%). The percentage of hearing impairment was higher among the children from the lower socio-economic level (3.5%) as compared with those from higher socio-economic backgrounds (2.1%). The incidence of hearing loss among mentally retarded children was much higher than in both previous groups, namely 8.7%. *(Excerpta Medica, XI)*

46. FELDMANN, H., Die geschichtliche entwicklung der hörprüfungsmethoden. (The historical development of methods of testing hearing.) Stuttgart: Georg Thieme Verlag; New York: Intercontinental Medical Book Corporation, 1960. Pp. 92. $4.70.

In an extensive review of the literature, the author briefly presents the historical development of functional hearing tests. The five chapter titles are: (1) deafness and its diagnosis in antiquity and in the middle ages; (2) the discovery of bone conduction and its diagnostic significance; (3) the development of hearing tests with tones and noise; (4) methods of tone-audiometry and their development; and (5) the development of hearing tests with speech. Extensive bibliography. *(P.A.Y.)*

47. FELDMANN, H., Erfahrungen mit der geräuschaudiometrischen adaptationsmessung. (Experiences with measuring adaptation by means of noise audiometry.) *Pract. Oto-Rhino-Laryngol.*, Basel, 22, 1960, 206-220.

The author describes the monaural method of noise audiometry to measure hearing adaptation during and after stimulation and reports the results of 100 cases of inner ear deafness. The results are considered in relation to the recruitment phenomenon as determined by noise audiometry, the difference limen, the type of curve, and the clinical diagnosis of the deafness. The following combinations of results occurred with significant frequency: 1) Flat curve, ganglionic type of the noise audiogram and pathological auditory fatigue. 2) Steep curve, hair cell type of the noise audiogram, normal adaptation. No relationship between these phenomena and known clinical entities could be discovered. *(Author's summary)*

48. FOX, M. S., Industrial hearing conservation programs. *Eye Ear Nose Thr. Mon.*, 39, 1960, 47-51.

The author discusses the acute need for programs of hearing conservation in industry from the point of view of the physician. Many present programs are totally inadequate and others could be improved. Equipment, testing environment, personnel, and record keeping are briefly reviewed. The need for noise reduction is stressed. *(P.E.R.)*

49. GRAVENDEEL, D. W., and PLOMP, R., Micro-noise trauma? *A.M.A. Arch. Otolaryngol.*, 71, 1960, 656-664.

The authors studied three groups of subjects. Group A consisted of 61 persons who had been light firearms instructors or who had been exposed many times to gunfire. In this group there were 52 permanent dip-shaped hearing losses. Group B consisted of 48 subjects who had not been exposed to gunfire but who had worked in occupations where they had been subjected to a good deal of environmental noise. In this group there were 33 dip-shaped losses. Group C consisted of 138 subjects who had not had previous military training and who had not worked in high noise-level occupations. This group produced 41 permanent dip-shaped hearing losses. The average age for the three groups was 20 years. All three groups showed the same pattern with respect to hearing loss. The dip occurred on the average at 6000 cps, ranging from 3500

to 8000 cps. The losses varied from 30 to 109 db. The chief difference among groups was the extent of the loss, with Group A showing the most severe losses, Group B fewer severe losses, and Group C the fewest severe losses. From a review of the literature and their own findings the authors conclude that this pattern of hearing loss must be due to noise trauma or a skeletal blow. They point out that in everyday living noise levels between 70 and 100 db are frequently experienced. They postulate that the damage noted in Group C could be caused by this 'normal-noise' in highly susceptible ears and suggest the term 'micro-noise-trauma' to describe hearing losses of the dip type where exposure to high noise level or skull trauma cannot be demonstrated. *(J.J.)*

50. GRINBERG, G. I., O vybore nulevogo urovnia sily zvukov pri issledovanii slukha metodom rechevoi audiometrii. (On the selection of a zero level of sound intensity in the study of hearing by the method of speech audiometry.) *Vest. Oto-Rino-Laringol.*, Moscow, 22, 1960, 17-21.

In order to compare the results of speech audiometry, conducted by various investigators, it is necessary in all instances to adopt an identical zero level of sound intensity. As a point of departure, the author recommends the minimal intensity of sound at which a person with normal hearing begins to perceive speech stimuli without their differentiation. This zero level is called 'the hearing threshold of speech' in contradistinction to the 'threshold of speech intelligibility.' The latter term signifies the minimal intensity at which the subject under study differentiates 50% of speech signals. *(Author's summary)*

51. GRINGS, W. W., LOWELL, E. L., and HONNARD, R. R., Electrodermal responses of deaf children. *J. speech hearing Res.*, 3, 1960, 120-129.

Fifteen severely deaf preschool-aged children were administered controlled series of light, tone, and electrotactual stimuli on two different occasions in order to obtain normative data on the electrodermal behavior of these children. The rate of spontaneous responding was evaluated by control trials during rest periods and between periods of stimulation. This error responding was compared from one session to another. The percentage of subjects responding on a given trial as well as their response magnitudes and latencies were compared across sessions and types of stimulation. The response magnitudes were correlated to achieve estimates of reliability. Two types of reliability were estimated: within-session reliability reflecting moment-to-moment variability of the subjects during a single observation period; and, between-session reliability reflecting the multitude of day-to-day changes in the subject and such equipment variations as changing electrodes. *(Authors' summary)*

52. HAUG, C. O., and GUILFORD, F. R., Hearing testing on the very young child. *Trans. Amer. Acad. Opthalmol-Otolaryngol.*, 64, 1960, 269-271.

Several years ago, the authors described the development of a solenoid-released, jack-in-the-box device, the Pediacoumeter, to be used as accessory equipment to the audiometer in measuring the pure tone thresholds of the very young child aged from two through five years. The reward of seeing the painted dolls of the Pediacoumeter and the surprise element of their popping up captures and holds the child's interest for the listening situation. The Pediacoumeter consists of a small case in which are mounted seven doll heads. These doll heads are fastened to shafts from seven solenoids providing the driving force for the release of the figures up and out of their houses when the pushbutton switch is closed by the child, as he hears the audiometric pure tones. A separate switch is provided in the line to prevent random completion of the circuit by the child when the audiometer tones are not presented. The authors report the result of testing 968 pre-school children using the Pediacoumeter since the time of the original report in 1951. They were 96% successful with the five-year-old group (287 out of 298), and 94% successful in testing the four-year-olds (272 out of 287). In testing children three years of age, they report a percentage of success of 82%, or 187 out of 227. There were 62 successful tests on two-year-olds for a percentage of success of 47. On the one-year-olds they have had only three successes—one child 21 months old and two who were 22 months old—for a percentage of 12. The authors

utilize the Pediacoumeter infrequently in the one-year group and rely primarily on noisemakers and sound effects. The totals show 811 successful tests out of the total population of 968 children. Ninety were unsuccessful where conditioning to testing with pure tones was not possible, and 67 were additionally unsuccessful because of lack of cooperation with the earphone headset or one earphone held to the ear. This represents a total percentage of success of 83, with 17% unsuccessful. The Pediacoumeter has been used advantageously on many children six years of age and over who had had brain injuries, were mentally retarded or otherwise severely handicapped in language areas and attention span, but these were not included in the present study of preschool youngsters. *(M.H.M.)*

53. HINCHCLIFFE, R., The pattern of the threshold of perception for hearing and other special senses as a function of age. *Gerontol.*, Basel, 2, 1959, 311-320.

An analysis of pure tone thresholds of hearing as a function of age shows that these exhibit an exponential decrement when the intensity of the threshold stimulus is expressed on a psychological magnitude scale. Examination of available data indicates that the thresholds of perception of other sense modalities exhibit this exponential decrement with age. There therefore appears to be what might be termed a fundamental presby-psychic law. Evidence is adduced to support a contention that these threshold changes are possibly primarily attributable to degenerative changes in the CNS instead of peripherally in the end-organs. *(Excerpta Medica, XX)*

54. JERGER, J. F., and HARFORD, E. R., Alternate and simultaneous binaural balancing of pure tones. *J. speech hearing Res.*, 3, 1960, 15-30.

The interaural intensity relations producing equal loudness when pure tones were presented alternately, and median-plane localization when they were presented simultaneously to the two ears, were studied in patients with unilateral hearing loss, both with and without loudness recruitment. Median plane localization required more nearly equivalent SPL at the two ears than did equal loudness, but there were important qualifications. It was concluded that loudness recruitment must always be measured by alternate, never by simultaneous, stimulation of the two ears. *(J.F.J.)*

55. KAWATA, S., TOMINAGA, Y., and ABE, H., Hearing loss in employees of a steel mill. (Japanese text.) *Otol. Fukuoka*, Fukuoka, 6, 1959, 37-45.

The hearing disturbances of 555 workers in a steel mill were investigated. The workers were classified in groups according to the intensity of the noise to which they were exposed and the number of years employed. Group 1 was exposed to 70 db noise. In this group, 54.7% of the workers employed for five years or less had normal hearing thresholds; only 2.4% of those employed for 21 years or more exhibited normal hearing thresholds. Group 2 consisted of workers exposed to noise of 90 db. In this group only 4.2% of workers had normal hearing thresholds after five years of employment; and after 21 years of employment only 1.8% of workers had normal hearing thresholds. Hearing loss appeared to be directly related to the intensity of noise exposure and the number of years of exposure. *(S.P.Q.)*

56. KUBO, K., Studies on hearing variations after blunt head injury. I. Clinical study. (Japanese text.) *Otol. Fukuoka*, Fukuoka, 4, 1958, 289-296.

The audiograms of 102 cases of head injury were examined. Eighty-five percent of the cases were found to have hearing losses, with about 50% of the hearing losses being of the perceptive type. In the cases with head injury in the temporal region mixed or conductive deafness was most frequent, while in the cases with injury at the face or the nasal radix perceptive deafness was predominant. Hearing loss at 4000 cps was often caused by a slight injury at the face or the nasal radix. Head injury, regardless of its location, usually resulted in bilateral impairment of hearing. *(S.P.Q.)*

57. LANGENBECK, B., Messung der hörermüdung und adaptation am patienten: der 'Kietz-Test' und seine klinische bedeutung. (Measurement of auditory fatigue and adaptation in the patient: the 'Kietz test' and its clinical importance.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 202-211.

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The author succeeded in simultaneous determination of adaptation and auditory fatigue. This new method is called the 'Kietz test.' It consists of the following steps: (1) The curve of the auditory threshold of the patient is determined. (2) A noise audiometric curve is measured. (3) As (2), but with the use of a time switch, which causes a periodical interruption of the noise so that noise pulses (instead of a continuous noise) of 0.4 sec. duration with intervals of 0.04 sec. are obtained, which superimpose the audiometer tone as continuous tone. Eighty 'Kietz tests' were carried out. In healthy subjects the curve measured with the time switch halves the distance between the auditory threshold curve and the 'normal' noise audiometric curve. The same is found in pure disorder of sound conduction. In disorders of the inner ear the pictures are more complicated. A pathological fatigue is often found. If, for instance, it is found in the region of the lower frequencies, it is characteristic of Menière's disease, whereas such a pathological fatigue in the higher frequency regions generally indicates a degenerative impairment of hearing. After an old acoustic trauma the test may sometimes be normal, in other cases it may show a pronounced pathological auditory fatigue, however. In simple impairment of hearing of old age and in endogenous hereditary deafness the Kietz test is normal. It is pointed out that disorders of the internal ear with verified pathological auditory fatigue are definitely more serious than those of the same severity, but without pathological auditory fatigue, especially with regard to hearing of speech. The test seems to be an important progress in the technique of audiological diagnosis. *(Excerpta Medica, XI)*

58. MANFREDI, A., and CERESIA, G., Elettrofonimetria da stimolazione con correnti di forma d'onda complessa. (Electrophonimetry with stimulation with complex-wave currents. *Clin. Oto-Rino-Laringol.*, Rome, 10, 1959, 226-249.

The electrophonic effect consists in the fact that by electrical stimulation of the auditory apparatus, acoustic sensations are evoked, the pitch and timbre are correlated with the frequency and the harmonical composition of the stimulating current. Reference is made to the various stages in the history of this research up to the latest experiments, and to the most recent electrophysiological interpretations of the phenomenon, with a description of its practical application as an additional test of the functional condition of the inner ear. Using a new apparatus, the electrophonic effect has been studied in a group of normal subjects, who were subjected to mono-auricular stimulation with complex-wave currents. After a description of the technical details, the results are reported of 40 observations, and the normal electrophonic threshold curve and the electrophonimetric patterns are described. The simplicity of the required apparatus, the relative rapidity of the new method, the uniformity and reproducibility of the results make this a valuable practical method for clinical examination of cochlear function. It is to be hoped that now microsurgery of the ear has made such great progress, the electrophonic method will find widespread application, as together with other audiological tests it is of great aid in selecting cases of hypacusia for surgery, and in determining the most suitable method of treatment. *(Excerpta Medica, XI)*

59. MORITA, M., Experimental studies of the effects on hearing of vibration and noise. (Japanese text.) *Otol. Fukuoka*, Fukuoka, 4, 1958, 327-341.

Persons who work in factories or in high-speed transportation facilities often are exposed to vibration as well as to noise. The author measured the effects of noise and vibration on 10 young men and women. A specially constructed vibration-generator was used in the vibration tests. Vibration was administered to the subjects for 30 minutes at a time. The results appeared to indicate that the hearing threshold was lowered (hearing acuity improved) by the administration of vibration. The subjects were exposed to white noise at 100 db for 30 minutes. This resulted in temporary threshold shifts (decreased acuity), especially at 4000 cps. When vibration and white noise were used together they appeared to produce temporary hearing loss greater than that resulting from noise alone. The author concludes that the existence of vibration alone is not harmful to hearing but becomes very harmful when accompanied by loud noise. *(S.P.Q.)*

60. MUKUNO, O., and SUEYOSHI, S., Clinical observations of auditory disturbances caused by streptomycin (Japanese Text) *Otol. Fukuoka,* Fukuoka, 6, 1959, 12-20.

Two hundred and seventy five patients with tuberculosis to whom streptomycin was administered intramuscularly were observed and the results were as follows: (1) Hearing impairments were found in 14.9% and tinnitus was found in 22.0%. (2) There was no difference in the frequency of auditory disturbances between patients who had normal hearing before the use of streptomycin and those who had hearing losses for high tones prior to the streptomycin treatment. (3) Ototoxicity of combined streptomycin was less than that of dihydrostreptomycin. (4) The appearance of auditory disturbances after the use of streptomycin had no parallel relation with other side reactions. (5) Hearing loss was most frequent at 4000 and 8000 cps in the early stages of streptomycin impairment. *(S.P.Q.)*

61. MUKUNO, O., TAWARA, M., TAKESUE, M., and MORI, T., Clinical observation of auditory disturbances caused by streptomycin. (Japanese text.) *Otol. Fukuoka,* Fukuoka, 6, 1959, 21-28.

Auditory disturbances were found in a considerable percentage of 164 patients as a result of streptomycin therapy. Many of these patients suffered hearing losses of a severe degree at many frequencies even when the dosages of streptomycin administered were small. Four types of audiogram were found: (1) abrupt losses in the high frequencies; (2) gradual losses in the high frequencies; (3) flat losses across many frequencies; and (4) trough-shaped losses. For many patients the hearing loss averaged 30 db or more across the speech range. *(S.P.Q.)*

62. NEIMAN, L. V., Objective examination of the auditory sensitivity in deaf-mute and hard-of-hearing children of pre-school age. (Russian text) *Doklady Akad. Ped. Nauk,* RSFSR, 2, 1957, 171-174.

A conditioned motor reflex method was devised in order to determine the auditory sensitivity in 3.5- to 7-year-old children. The child had to squeeze a rubber ball in response to an auditory stimulation; at the same time a picture on a screen appeared before the child; an auditory signal followed the picture; the child squeezed the rubber ball again and the picture changed in the frame. In order to avoid the formation of a response to time, the time interval was varied. The operation of the sound stimulus, the motor response of the child and the reinforcement action were automatically recorded. Fifty-two children were examined. The auditory threshold, determined with this method, was lower and the reaction to sound was formed more rapidly than in examinations using standard audiometry. When the intensity of the sound stimulus was decreased to threshold and subthreshold levels, the reaction to sounds of subthreshold intensities was occasionally absent; the same was noted at times when the intensity of the stimulus was reduced sharply. Sudden changes from low to high tones and vice versa occasionally impeded the formation of the motor reaction. The reaction could also fail to appear if the stimulus was being used for the first time and its intensity was only slightly over the threshold; however, if a reaction was elaborated in response to a tone of a different frequency, exceeding the threshold considerably and the first signal was then tried again, the reaction to this signal was now formed. Thus the formation of motor reaction to an auditory stimulus depends upon the conditions of the transmission of such stimulus. *(Excerpta Medica, XI)*

63. NOMURA, Y., Studies of objective audiometric examination. (Japanese text.) *Otol. Fukuoka,* Fukuoka, 6, 1959, 157-182.

Objective audiometric examinations were performed using the GSR as the conditioned response. Forty-one cases, ranging in age from two to 56 years, were classified into three groups: (1) normal hearing, (2) moderately hard-of-hearing, and (3) severely hard-of-hearing. Each group was tested by means of GSR audiometry. In establishing the conditioned response, the high frequencies, 2000-4000 cps, appeared to be more effective than the low frequencies. Fewer trials were required with children than with adults in establishing the conditioned response in GSR audiometry. The minimum sound volume required to establish the conditioned response at each frequency was considered the threshold of hearing in the GSR testing. Comparison of

the GSR thresholds with the thresholds obtained by traditional pure-tone audiometry showed the GSR thresholds to be lower in the low frequencies and higher in the high frequencies. *(S.P.Q.)*

64. NOSAKA, Y., UENO, H., and TOYONARI, K., The influence of flying on hearing and the vestibular function. (Japanese text) *J. oto.-rhino-laryngol. Soc. Jap.*, Tokyo, 62, 1959, 561-569.

The influence on hearing and the vestibular function of 37 pilots of a jet plane T-33A before and after flying was studied and the following results have been obtained. The air conduction audiogram showed loss of hearing in 32.1% of the pilots. The degree of loss was 10 db in 2/3 and from 15 to 20 db in approx. 1/3 of them. The frequency and degree of disturbance were more significant in the higher tone range above 4,000 cps, especially in 6,000 cps. The change in the bone conduction was observed in 38.3% of the pilots, but it was smaller in comparison wich the air conduction. In the lower tone range below 500 cps, hearing showed a slight increase, and in above 1,000 cps a small degree of loss was observed. The amount of flying experience did not indicate any difference in the incidence of the disturbance, but in all the pilots including those not influenced, the change in hearing was minimal. On the contrary in the group having a greater number of years of flying experience the db loss was greater in the lower frequencies below 1,000 cps and above 2,000 cps. The vestibular function was examined before and after flying; Romberg's sign was more marked in 83.3% of these cases after flying and the inversion angle decreased on goniometry in 73.0% and the average value of postrotary nystagmus showed 2.6 times increase after flying. The percentage and degree of disturbance was found less among those having longer years of flying experience, suggesting some adaptability to the stimuli. *(Excerpta Medica, XI)*

65. PALMGREN, R., Work under compression and in noisy environment. *Acta. oto-laryngol.*, Stockholm, 51, 1960, 165-174.

The author reports on the general medical and otolaryngologic screening and care of men working in underground railway construction. Audiograms were taken in 1953 and 1957. The incidence of noise-induced hearing loss in this group is discussed. *(R.C.B.)*

66. REED, G. F., An auditory study of two hundred cases of subjective tinnitus. *A.M.A. Arch. Otolaryngol.*, 71, 1960, 84-95.

Two hundred patients in whom subjective tinnitus was a significant complaint were studied audiometrically. An attempt was then made to match the central frequency and frequency spectrum of each case of tinnitus. Each patient made three independent judgments with respect to the spectrum of frequencies which matched his tinnitus. In cases of unilateral tinnitus the noise was applied to the ear without tinnitus. When the tinnitus was bilateral the noise was applied to the ear being matched. The patient compared the applied noise with his own noise by alternately applying and removing the earphone. An attempt to measure the loudness of the tinnitus was made on 90 patients. The matched noise was applied to the opposite ear or, in bilateral cases, to the better ear and the threshold for the noise was determined. The noise was then increased in intensity until it was judged by the patient to be equal in loudness to the tinnitus. The difference between threshold and the level required to match the tinnitus was taken as a measure of the loudness of the tinnitus. An examination of the data revealed the following major facts: (1) a majority of the subjects (61.5%) selected either a pure tone or a relatively narrow band of frequencies on either side of the central frequency; (2) the central frequency match was between 3500 and 5000 cps for 35% of the subjects; apart from this concentration there was a fairly even spread throughout the range of 0-9000 cps; (3) in 69% of the cases the loudness of the tinnitus was less than 10 db; the highest intensity match (three cases) was in the range of 41-50 db; the subject's estimate of the severity of his tinnitus rarely corresponded to the measured level; (4) no correlation was found between the case's description of his tinnitus and the diagnosis, type of deafness, or site of origin; (5) approximately 25% of the cases were in the 20-50 age group; 64% were between 41 and 70 years of age; (6) tinnitus was unilateral in 53% of the cases,

bilateral in 39% and 'in the head' in eight per cent; (7) it was found to be constant in 87% and intermittent in 13% of the cases; and (8) tinnitus composed of a broad band of frequencies is often described as 'steam'; a medium band width as 'buzz' and a narrow band width as 'ring.' *(J.J.)*

67. SAITO, H., Variations in hearing acuity in normal ears before and after physical exercise. (Japanese text.) *Otol. Fukuoka*, Fukuoka, 5, 1959, 117-134.

The author studied the effect on hearing acuity produced by various physiological conditions. He had 76 young persons, aged 17-21, play nine kinds of games: tennis, judo, Japanese fencing, volleyball, basketball, rugby, wrestling, 1500 meter race, and 5000 meter race. Immediately before, immediately after, 30 minutes after, one hour after, and two hours after the exercise he obtained pure tone audiograms and examined the variation in auditory acuity. The exercise appeared to produce a temporary threshold shift in some of the subjects. The TTS after exercise was most evident in the frequency of 4096 cps. The restoration of the TTS took 30 minutes with tennis, judo, and Japanese fencing; one hour with volleyball, basketball, 1500 meter race, and rugby; and two hours with wrestling and the 5000 meter race. In the 152 ears tested, the hearing loss at 4096 cps was observed in three among 18 ears with Japanese fencing, in three among 12 ears with volleyball, in four among 16 ears with basketball, in four among 20 ears with the 1500 meter race, in five among 18 ears with rugby, in 10 among 24 ears with wrestling, and in 12 among 20 ears with the 5000 meter race. The appearance of the dip at 4096 cps became more frequent and its depth greater in proportion to the severeness of the exercise and the degree of fatigue. The author compares this temporary threshold shift at 4096 cps after physical exercises with auditory fatigue and hypothesizes that it is a result of circulatory disturbance. *(S.P.Q.)*

68. SUZUKI, T., and OGIBA, Y., A technique of pure tone audiometry for children under three years of age. Conditioned orientation reflex (C.O.R.) audiometry. *Rev. Laryngol. Otol. Rhinol.*, Bordeaux, 81, 1960, 33-45.

A new audiometric technique was developed by utilizing the basic principle of conditioned orientation reflex where a visual stimulus which is strange and attractive to children was employed as the unconditioned stimulus. Toy dolls that can be lighted manually by the tester, and placed immediately below a loudspeaker, are situated in front of the child and some distance apart. The child is conditioned to respond to an audible tone by turning his head in the direction of the tone in expectation of seeing the dolls light. Results obtained by using this test on 100 children under three years of age are presented and followed by a discussion and evaluation of the testing technique. The authors feel that the most suitable age of a child for the test is found to be from 12 months to 3 years after birth. *(P.A.Y.)*

69. VAN DE WAAL, De bewerking van het continue audiogram by lawaaidoofheid. (The compilation of the continuous audiogram in noise deafness.) *T. Soc. Geneesk.*, 37, 1959, 542-548.

Continuous audiometry is the most suitable method to study the influence of noise on the hearing organ. To compile audiograms of a group of persons, they must be coded in comparable numbers. A method is described where the threshold of hearing is read off between the frequencies of the audiogram chart. For this purpose each octave in the frequency area above 1,000 cps is divided in 6 frequency bands. To obtain an insight into the average hearing loss of a group, a method is described where the dips in the threshold curve are shifted towards each other and then averaged. Thus, one acquires a better understanding of the shape and size of the hearing loss than with the usual average audiogram. These methods are explained by means of audiograms of 100 persons working in an engine-room. *(Excerpta Medica, XI)*

70. VAN DISHOECK, H. A. E., De betekenis van beroepsdoofheid. (Acoustic trauma by industrial noises.) *T. soc. Geneesk.*, 36, 1958, 611-616.

The incidence of acoustic trauma in the population increases together with the amount of horse-power used in industry. Industries producing noise above the traumatizing limit are spreading fast in most countries, and thus every physician and

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every engineer may be confronted with the problem of noise prevention. Continuous audiometry proved to be helpful in the detection of noise trauma, and also in studying experimental noise fatigue. The phenomena of adaptation to noise and loudness recruitment are discussed, and a theory explaining localization of the tonal dip is ventured. *(Excerpta Medica, XIX)*

71. VICTOREEN, J. A., The pressure-log chart. *Audecibel*, 9(3), 1960, 7-9.

The author proposes the use of a specially drawn chart which converts relative audiometric readings to absolute sound pressure. The graph might best be described as equal sensation-level contours. The abscissa represents frequency while the left ordinate is divided into decibels re: 0.0002 microbar. The right ordinate shows hearing loss in decibels with the contours of equal sensation level drawn from the ordinate across the graph. The author states that this arrangement shows the hearing loss in its proper relation to the whole usable sound pressure range. *(D.A.H.)*

72. WHIPPLE, C. I., and KODMAN, F., The validity of objective speech audiometry. *J. Laryngol. Otol.*, London, 74, 1960, 84-89.

This investigation was concerned with the validity of a new method of auditory measurement referred to as *objective speech audiometry*. The results consisted primarily of threshold measurements which were compared by means of correlational techniques with thresholds obtained by standard puretone audiometry and standard or subjective speech audiometry. The objective speech threshold was obtained by a procedure involving classical conditioning. A single monaural threshold was measured for each subject. Ears, stimulus intervals, and test frequencies were randomized. The following are the major findings: 1. Objective speech audiometry showed a correlation of .85 with standard puretone audiometry and .78 with standard speech audiometry. The results support the validity of objective speech audiometry as a laboratory method for measuring the auditory threshold and lend support to the pioneer study by Ruhm and Carhart. 2. The two outside validity criteria, standard puretone audiometry and standard speech audiometry, correlated .85 and support the results generally reported in the scientific literature by other investigators. 3. Regarding the three test methods used in this study, the standard error of the estimate predicts the results for one of the test methods from each of the other two methods on the order of one to two db. *(Authors' summary.)*

Auditory Training

73. BECKMANN, G., Zur bestimmung des trainingserfolges beim erwachsenen-hörtraining. (Determination of results of auditory training in adults.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 225-230.

The success of auditory training may easily be determined by comparing speech intelligibility before and after the course. The intelligibility for monosyllables was tested with Frieburg norms. As there are no standard tests of intelligibility for sentences in Germany a series of test sentences was devised. They were arranged in 2 similar parts, A and B, the first being used before and the 2nd after the course of training. Each part consists of 20 sentences of 5 words each, similarly constructed, with similar phonetic properties, and of equivalent difficulty. Their content refers to various situations in everyday life and is not dependent on practice in auditory training. *(Excerpta Medica, XIX)*

74. GILLIAT, M. E., Learning to hear with a hearing aid. *Hearing Dealer*, 10(3), 1960, 8-9, 25.

The author describes her methods of auditory training. She discusses the use of rather gross sound discrimination in the early stages of training, and goes on to relate how, through training and use, the aid can serve a purpose regardless of the degree of hearing impairment. *(D.A.H.)*

Diagnosis and Appraisal

75. ABRAHAMOVIĆ, M., Význam kalibrovaného Weberova testu při fenestraci. (The value of the calibrated Weber test in fenestration.) *Československá Otolaryngol.*, Prague, 9, 1960, 84-89.

In the introduction the author describes the diagnostic value of the Weber test and its prognostic value shortly after fenestration. In the postoperative course the indi-

vidual stages according to laterisation and the threshold of bone conductivity are differentiated. The author describes the technique of the calibrated Weber test and presents an account of the results obtained by this method in 38 patients with otosclerosis, treated surgically at the ENT Clinic in Prague 12. Based on hitherto assembled results, the author confirms that the calibrated Weber test is valuable for determining the prognosis of fenestrations. *(Author's summary)*

76. BANDTLOW, V. O., Über spätresultate nach tympanoplastik. (Late results of tympanoplasty.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 39, 1960, 355-366.

300 cases were examined three years after tympanoplasty performed for various middle ear conditions. In types I-III the middle ear component of deafness was less than 15 db in 43%; 16-30 db in 36%, and over 30 db in 21% of cases. In types IV and V 85% had less than 30 db of conductive deafness. The inner ear function had deteriorated in 10% and improved in 12%. The remaining 78% showed an unchanged bone conduction. The Eustachian tube was patent in 89% and the graft over the middle ear cavity was freely mobile in 83%. The perforation recurred in 6%. The reasons for this are given and the importance of regular postoperative supervision by a specialist stressed to avoid stenosis in a number of operative cavities. *(Author's summary)*

77. BATTISTI, G. P., La capacità uditiva nei traumatismi cranici recenti. (Auditory capacity in cases of recent cranial trauma.) *Ann. Laringol. Otol. Rinol. Faringol.* Torino, 58, 1959, 398-406.

After a review of the literature concerning the repercussions of cranial trauma on the auditory organs a description is given of the audiometric and clinical findings obtained in the examination of 25 cases of recent cranial lesions. The examinations revealed the presence in 82.69% of the cases studied, of hypacusia, of which the perceptive forms always manifested themselves with 5 'type curves,' which are described; these forms of deafness are bilateral but not symmetrical nor, as a rule, irreversible. In conclusion the author considers the possibilities and the great advantages of early audiometric examinations in all cases of trauma of the skull. *(Excerpta Medica, XI)*

78. BAUER, F., The "closed" fenestration operation. Long term results and acoustics. *J. Laryngol. Otol.*, London, 74, 1960, 290-299.

This paper purports to review the functional results of the closed fenestration operations performed by P. Garson between 1947 and 1955, to compare them with the results of conventional fenestration, and to discuss the differences. Of 39 cases suitable for evaluation, the post-operative course is summarized. In 26 cases there was an initial gain of 10 to 30 db. After three days hearing deteriorated but remained better than the pre-surgical level for nearly three months. Then additional deterioration appeared, often suddenly. In eleven cases there was no appreciable initial gain. In two cases there was immediate deterioration. No patient permanently achieved the 30-db level for speech frequencies. The conclusion is reached that in the closed fenestration both the new and the round window are in a common cavity behind the tympanic membrane; thus, the pressure and phase differences are small and poor hearing results. The temporary improvement is due to the presence of fluid in the middle ear which transmits movements of the tympanic membrane directly to the round window. When the fluid disappears, hearing deteriorates. *(C.L.)*

79. BERBERICH, J., Otological findings in birth injuries of the newborn. *Arch. Pediat.*, 77, 1960, 72-84.

This is Part II of a study including discussion and review of the literature. (Part I, which was devoted to Experimental and Clinical Observations, appeared in the December, 1959 issue.) The theory of the author that birth trauma of the large or small fontanels or longitudinal sinus could lead to stasis and other changes in the pituitary gland, ear, or eye is confirmed by experimentation with puppies, kittens, and rabbits in which a suction cup with manometer was applied to the scalp in the area of the longitudinal sinus. One of the clinical results indicates that the clinical picture does not necessarily reflect the severity and extent of cerebral injury. For example, massive lesions were found at necropsy of

children who had presented the same clinical picture as children with considerably slighter damage. There is considerable literature on the anatomic and neurologic aspects of birth injury but its otologic aspects have received comparatively little attention. From a bibliography covering the literature of the past 100 years in all languages, it is apparent that birth injury is rapidly gaining increased recognition. The relation of speech defects or such neurologic disorders as Little's disease, spasmophilia, pareses, hemiplegias, and syringomelia to birth injury is now realized. The problem of deafmutism as related to birth injury is of particular interest to otologists. So-called congenital deafness cannot be explained on the basis of intrauterine noxae, material infections, or heredity since the histories reveal no such clues. Recovery from a silent or unrecognized meningitis or otitis media is often assumed in such cases. Detailed examination as early as possible and with all available methods, of all deaf children might produce considerable information on the etiology and provide the means of differentiating peripheral from central nervous system deafness. Present knowledge allows the assumption that birth injury may cause peripheral deafness by hemorrhage into the labyrinth or the acoustic nerves, or central nervous system deafness by damage of the auditory pathways or the hearing center. One can draw a close analogy to speech defects resulting from birth injury. One opinion is expressed in which inner ear damage due to birth injury might play an important role in the etiology of deafmutism, particularly in the first born, in whom the likelihood of birth injury is greatest. There are no clear indications of the etiology in a high percentage of deafmute children. Not until the petrous bones and brains of large series of such children have been carefully examined will the question of etiology be clearly answered. There is also the idea that asphyxia rather than birth injury plays the primary role. *(M.N.)*

80. BORRI, G., Esiti funzionali delle emislabirintazioni chirurgiche nelle sindromi di Ménière. (Functional sequelae of surgical monolateral labyrinthectomy in Menière's syndrome.) *Arch. Ital. Otol. Rinol. Laringol.*, Milan, 70, 1959, 619-632.

The case material comprises 25 cases operated on with different surgical techniques and controlled during the immediate postoperative period and later on during a period varying between 1 and 9 years. The study of this material shows that late results are always satisfactory, regardless of the surgical technique adopted. The effect on tinnitus appears to be less satisfactory. The time needed for obtaining a socially satisfactory condition of equilibrium varies much from one case to the other and apparently bears no relationship to the preoperative conditions of the vestibular apparatus or to the surgical procedure. The cases where the reflexes on the side operated upon were completely abolished before the intervention usually show a shorter and less marked postoperative reaction. Objective spontaneous signs of decompensation persist during a long period and deficitary nystagmus of the 2nd degree may be shown even after some years; however, this does not alter the patient's sensation of having regained a nearly normal equilibrium. *(Excerpta Medica, XI)*

81. BORRIGLIONE, G., Rilievi audiometrici in casi di blocco della finestra ovale da otite media purulenta cronica operati di timpanoplastica. (Audiometric findings in cases of block of the fenestra ovalis due to chronic purulent otitis media treated with tympanoplasty.) *Ann. Laringol. Otol. Rinol. Faringol.*, Torino, 58, 1959, 49-59.

From the cases of chronic purulent otitis media examined the conclusion was drawn that an audiometric air conduction curve without notches or tortuosity with practically normal bone conduction indicates the presence of a functional block of the fenestra ovalis, whereas an audiometric curve with sawteeth and tortuosity with bone conduction abnormal for the high notes indicates that the fenestra ovalis is not blocked and can still be used for tympanoplasty. *(Excerpta Medica, XI)*

82. BOSATRA, A., Otosclerosis of the inner ear. A clinical study. *J. Laryngol. Otol.*, London, 74, 1960, 209-216.

The various locations, numbers, and extensions of otosclerotic foci are carefully discussed, thus explaining the various clinical types of disease: the classical, bilateral type, the unilateral, the mixed, and the purely cochlear type of otosclerosis, char-

acterized by perceptive deafness. Three cases are described of otosclerosis of the cochlear type affecting one ear, the contralateral ear revealing the classical disease. One case was also demonstrated at operation. Diagnostic difficulties are then considered: the hearing loss is not typical, but the presence of an end-organ lesion may be demonstrated by adaptation tests and is of clinical value. The absence of vestibular involvement, the otherwise negative history, and the subjective symptoms can further help in the diagnosis. Theories explaining the onset of the perceptive deafness in these cases where the otosclerotic area directly affects the cochlear capsule are then recalled. *(Author's summary)*

83. BOSATRA, A., Su di un nuovo test di funzionalità della finestra rotonda. (A new test of the functional condition of the fenestra rotunda.) *Minerva Otorinolaringol.*, Torino, 9, 1959, 6-11.

Experiments were carried out with a test of the functional condition of the fenestra rotunda which has been proposed recently by Horiguti. This test consists in the comparison of two audiometric examinations, before and after introduction into the middle ear cavity of 0.2 ml. of sterile boric solution with the patient keeping his head bent over on the opposite shoulder. The test is useful in all cases in which there is a tympanic perforation and is regarded as positive when the second audiogram shows an auditory improvement of at least 15 db for each of the four basic frequencies. It is stated that this test may be applied to advantage in the audiometric study of patients affected with otitic processes with tympanic perforation who show a left hypacousia of 30-40 db. *(Excerpta Medica, XI)*

84. DUBS, V. R., and MÜHLBERG, O., Akustisches trauma uud militärdiensttauglichkeit. (Acoustic trauma and fitness for military service.) *Practica Oto-Rhino-Laryngol.*, Basel, 22, 1960, 56-66.

The results of examining 144 officers, NCO's and soldiers who had suffered acoustic injury is considered and an attempt is made to estimate their fitness for military service according to the percentage of hearing loss, as suggested by *Boenninghaus-Roeser*. The authors attempt to subdivide the cases into: fit for military service and for firing practice, 20-35% hearing loss (bilateral); fit for service but not for firing practice, fit for service in reserves only, fit for service in auxiliary service, unfit for firing practice 30-55% hearing loss; unfit for military service over 55-60% hearing loss. In each case, however, an individual assessment is necessary which considers medical factors (the type of impairment, noise tolerance) as well as military factors (training, rank, age, type of service, adaptability) and personal factors (patient's occupation and psychological make-up). *(Author's summary)*

85. EPSTEIN, A., GIOLAS, T., and JORDAN, R. E., Audiometric evaluation of stapes mobilization surgery. *Acta oto-laryngol.*, Stockholm, 51, 1960, 55-62.

Three different techniques of stapes surgery are compared in terms of gains in air-conduction threshold and SRT following middle ear surgery. No statistically significant differences are reported for group, mean gains. *(R.C.B.)*

86. FALTÝNEK, L., Sluchové zisky po kolumelizacích. (Auditory gains following columellisation.) *Československá Otolaryngol.*, Prague, 9, 1960, 22-29.

The author evaluates auditory gains in 23 patients where columellization had been performed. He analyses the findings prior to operation and their significance for the prognosis of auditory gains. A considerable improvement of hearing by 20-25 db in speech frequencies was achieved in 11 patients (46 per cent), a smaller improvement by 10-18 db in 6 patients (27 per cent). The author analyses in detail the causes of failures which he sees in the failure of the plastic operation, in the closure of the oval window, and impairment of the organs of perception. Columellization has the most favorable prognosis in patients where the loss of hearing in speech frequencies does not exceed 50 db, where the perception organs are not damaged, where there is no ankylosis of the stapes or oval window and where the Eustachian tube is patent. *(Author's summary)*

87. FLEISCHER, K., Beziehungen zwischen präoperativen befund und mobilisierbarkeit des stapes bei otosklerose. (Preoperative findings and stapes mobilization

otosclerosis.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 400-409.

The principles of the operation and the technique employed are briefly described. In 65.6% of 200 cases and in 67% of the last 100 of these a hearing improvement of over 35 db was achieved. In 60% of the last 100 cases the air to bone conduction difference was narrowed to less than 15 db (Wullstein's 'audiological success'). The results are analysed with a view to discovering the influence of age, inner ear function and the air to bone conduction gap on the chances of successful mobilization. Mobilization did not appear to be more difficult in the higher age groups (up to 77 yr.) than in middle age. The inner ear function did not seem to influence the result. Finally, patients with greater air to bone conduction differences, when reduced to less than 15 db, obtained a relatively better hearing gain compared to those with smaller conductive components. The conclusions are that this conservative operation is widely indicated, but open vestibulotomy is best avoided. In several cases the gain in hearing did not become fully established for up to 6 weeks, and fenestration after a failed mobilization should therefore be deferred for several months. *(Excerpta Medica, XI)*

88. FURSTNER, J., and GATAI, G., Importance des examens otoneurologiques dans le diagnostic des tumeurs de l'acoustique. (The importance of otoneurological examinations for the diagnosis of tumors of the acoustic nerve.) *Ann. Oto-Laryngol.*, Paris, 76, 1959, 326-336.

An analysis of the otoneurological symptoms in 27 patients with tumors of the ponto-cerebellar angle gave the following results: (1) Apart from cochlear and vestibular anaesthesia, the most frequent symptom is spontaneous nystagmus, with decrease or loss of the corneal reflex. (2) Cochlear hyperaesthesia on the side opposed to the tumor is attributed to pronounced local hypertension and to general hypertension; it is undoubtedly caused by dislocation of the brain stem and circulatory disturbances. If the intracranial hypertension is not high, cochlear function on the side opposed to the tumor is usually normal in the cases of small tumors. (3) No close causal relationships could be demonstrated between vestibular hyperaesthesia on the side opposed to the tumor and intracranial hypertension, nor with vestibular anaesthesia on the affected side. It appears justified to suppose that the vestibular hyperaesthesia does not result directly from the hypertension, but is the consequence of a mesencephalic lesion which occurs at the same time as the appearance of the symptoms of the long pathway, particularly the pyramidal symptoms. (4) The presence, on the affected side, of spontaneous horizontal nystagmus with larger oscillations and the presence of vertical nystagmus are severe prognostic signs because they signify the medial development of a large tumor. (5) In cases where an acoustic tumor of central localization is suspected, and where cochleo-vestibular examination and the Stenwers projection give uncertain results, it is recommended to perform, after otoneurological examination, an examination of the trigeminus nerve and an axial and semi-axial tomograph. *(Excerpta Medica, XI)*

89. GÜNNEL, F., Zur dauerhaftigkeit des postoperativen gehörs nach myringo-stapedepexie. (Durability of postoperative hearing after myringostapedopexy.) *HNO*, Berlin, 7, 1958, 132-140.

This problem is considered on the basis of critical evaluation of 31 cases operated on in 1954 and 1955 (26 cholesteatomas and 5 chronic-granulating osteitides). Myringostapedopexy implies shifting of the preserved pars tensa of the tympanic membrane on to the head of the stapes. In accordance with the preoperative air conduction curves, corresponding observations are comprised in groups, within which preoperative and postoperative hearing are compared. It is found that a satisfactory degree of maintenance of the therapeutic results for years can be expected, together with a high degree of reliability regarding good postoperative hearing (of 31 cases evaluated, 27 showed good or satisfactory hearing). In some cases a considerable postoperative increase of the bone conduction curve can be counted on. A bad preoperative bone conduction curve is no absolute criterion of the degree of hearing ability achievable postoperatively. Details should be read in the original. *(Excerpta Medica, XI)*

90. HATTON, D. S., ERULKAR, S. D., and ROSENBERG, P. E., Some preliminary observations on the effect of galvanic current on tinnitus aurium. *Laryngoscope*, 70, 1960, 123-130.

Galvanic stimulation of the ear was performed in 33 patients with various kinds of tinnitus and with hearing losses of varying etiology. In 15 patients tinnitus varied with strength and polarity of the current. The changes in tinnitus did not provide diagnostic criteria for differentiating between peripheral and central auditory lesions. *(R.G.)*

91. HÜRZELER, D., Über ergebnisse der stapesmobilisation. (Concerning the results of the operation of stapes mobilization.) *Practica Oto-Rhino-Laryngol.*, Basel, 22, 1960, 195-201.

At the ENT clinic in Zurich the operation of stapes mobilization has been carried out by retro-auricular approach in 147 cases since 1955. In 21 cases the operation was a failure and fenestration was carried out immediately. Improvement of the operative technique increased the percentage of successful cases from 61% of 126 cases to 74% of 50 more recent cases. Initial hearing gain in successful cases was 22 db on the average, the air-bone conduction gap 19 db. This satisfactory initial result is unfortunately not permanent. Sixty-four per cent of the cases who were followed up for more than 6 months, showed definite diminution of hearing. This is also evident in the figures for the hearing gain and the air-bone gap. In the author's experience the initial success of the stapes mobilization operation is not permanent in a large proportion of the cases because of refixation of the stapes. *(Author's summary)*

92. HYBÁŠEK, J., Anatomický a funkční obraz spontánních tympanoplastik vzniklých v průběhu vleklých epitympanálních zánětů. (Anatomical and functional picture of spontaneous tympanoplasty occurring in the course of chronic epitympanal inflammations.) *Československá Otolaryngol.*, Prague, 9, 1960, 1-15.

Thirty-five cases of spontaneous tympanoplasty occurring in the course of cholesteatoma-suppuration were analyzed: 28 cases (out of these 8 underwent columellization and 20 ecranization) were verified surgically; in two instances spontaneous tympanoplasty developed after classical radical operation one columellization and one ecranization) and in 5 cases only clinical diagnosis was made, based on otoscopic and audiometric findings in dry ears (one columellization and four ecranizations). Spontaneous tympanoplastical formations occurred in 19.3% of all operated cases of chronic otitis (in 28 out of 145 operated cases). Ecranization was 2.5 times as frequent as columellization. The clinical material, divided into five groups was analyzed from the anatomical and functional standpoint and from the obtained results conclusions were drawn which are important for the diagnosis of various forms of spontaneous tympanoplasties. Spontaneous columellization is characterized by the following signs: perforation in the Schrapnell's membrane while the pars tensa of the tympanum is intact; destruction of the osseous chain in the epitympanal part with intactness of the stapes, the capitulum being grown together with the tympanum and its upper edge being grown together with the bone of the prominence of the facial nerve thus occluding the little tympanal cavity. The audiometric curve shows, in speech frequencies, approximately a loss of 20 db. Loud speaking is heard at the distance of 10 and more meters. Spontaneous ecranization with destruction of the osseous chain is characterized by these signs: wall perforation in the upper posterior quadrangle occluded by a moving membrane which occludes the round fenestrum and the remaining tympanal cavity. The osseous chain is destroyed mostly around the anvil-stapedian articulation; the long prominence of the anvil is usually missing as well as, very often, the capitulum and arcs of the stapes. The round fenestrum is freely accessible from the meatus. The audiometric curve shows, in speech frequencies, a level of about 30 db of loss, and shows frequently two peaks, in the 2000 and 8000 Hz range; loud speaking may be heard at the distance of 6-10m. Spontaneous ecranization with intact osseous chain is characterized by wall perforation in the upper posterior quadrangle skinned over by a moving membrane which occludes the round fenestra and the remaining tympanal cavity with tuba. The intact anvil-stapedian articulation

protrudes over the ecranization membrane, the osseous chain is complete and well mobile. The audiometric curve is similar to this in columellization and it is much higher than in simple ecranization; loud speaking may be heard at the distance of 10m and more. The occurrence of tympanoplastic membranes after a classical radical operation is characterized, during operation, by greater bleeding and conspicuous production of fibrin which coagulates in the middle ear and the trepanation cavities for a long time after operation. The membrane is formed by organization of fibrin during permanent ventilation of the cavity from the patent tube. Epitympanal inflammation may heal spontaneously and may leave a spontaneously formed tympanoplastic structure. It is necessary to distinguish in clinical diagnosis these spontaneous tympanoplastic structures, and to leave them intact during operation. All these described types ought to be, to every oto-surgeon, a model in reconstruction-surgery performed to the reconstruction of the transference system. *(Author's summary)*

93. JERGER, J. F., Observations on auditory behavior in lesions of the central auditory pathways. *A.M.A. Arch. Otolaryngol.*, 71, 1960, 797-807.

Audiologic procedures which this preliminary investigation have shown to be useful in studying unilateral lesions of the auditory pathways in the central nervous system are described by the author, and test data on three cases of known unilateral central pathology are given. The two techniques employed are: (1) a sequence of distorted speech tests patterned after Bocca's technique but with the use of PB-50 word lists, and (2) a combination of alternate binaural loudness balancing and median-plane localization of a simultaneous binaural in-phase signal. For the loudness balance test the intensity was fixed on the ear contralateral to the affected cerebral hemisphere and varied on the ipsilateral ear. Whenever possible the patient made the intensity adjustments himself by means of a two-db step attenuator. For the median-plane localization test the two stimuli are presented simultaneously, in phase, to the two ears. The intensity is fixed on one ear and varied on the other until the train of short tones appears to be in the center of the head. Case No. 1, diagnosed as left temporal glioblastoma, had essentially normal hearing except for a bilateral notch with the greatest dip at 4000 cps and greater loss (40 db) in the right than in the left ear. Conventional PB scores were high. Distorted speech scores were abnormally reduced for the right ear. Loudness balance tests demonstrated a reduction in loudness for the right ear at 250 cps where there was no reduction in acuity. All median-plane localization judgments were made with extreme difficulty. Cases II and III (left temporal epilepsy and left sphenoid wing meningioma, respectively) showed similar patterns of response except that Case II showed normal median-plane localization. The author suggests the following generalizations regarding auditory response patterns in unilateral lesions involving the auditory pathways within the central nervous system: (1) the threshold loss for pure tones is minimal at least for frequencies below 2000 cps; (2) scores on distorted speech tests are characteristically lower on the contralateral than on the ipsilateral ear; (3) there is a gross alteration in the interaural intensity relations producing equal loudness at the two ears; (4) median-plane localization may or may not be affected, apparently depending upon the nature and extent of the lesion. 'The data suggest the hypothesis that equality of loudness depends on the integrity of the entire afferent pathways, including the temporal cortex, whereas intra-cranial median-plane localization depends only on integrity of the pathways up to some critical sub-cortical center.' *(J.J.)*

94. KUČERA, M., and TEYSCHL, O., Závislost vzniku a průběhu dětské otitidy na reaktivitě organismu. (The development and course of otitis in children in relation to the reactivity of the organism.) *Čsl. Otolaryngol.*, Prague, 8, 1959, 186-189.

The authors compared the laboratory findings in a group of 39 children suffering from chronic otitis and 61 children with acute otitis: the erythrocyte sedimentation ratě, bacterial flora, the level of the specific antibody-streptolysin O, which was raised in 85% of the children with acute otitis. The protein spectrum shows a rise particularly in the albumin fraction and the α_2-globulin; in chronic otitis there is a drop

of the γ-globulin fraction and the mucoprotein level, which is raised in 100% of the patients with acute otitis; in patients with chronic otitis a slight increase was recorded in 67. Also the Weltmann flocculation reaction is markedly reduced in patients with the acute disease (in 43%), while in 92% of the chronic patients it was prolonged or the values were normal. The authors considered the values revealed as valuable indicators of the reactivity of the organism. They discuss the possibility of diagnosing the change from the acute to the chronic stage of the disease and emphasize that it is desirable to stimulate the reactivity of the organism by stimulation, climatic and dietetic therapy. *(Excerpta Medica, XI)*

95. MATZKER, J., Der heutige stand der diagnostik cerebraler hörstörungen. (Present status of the diagnosis of cerebral hearing disturbances.) *HNO*, Berlin, 8, 1960, 7-109.

The author claims that in cases of compression in the region of the fourth ventricle perception of low frequencies is damaged, and in changes of the upper medulla and the lower brain stem only the middle frequencies are perceived normally. Compression of the brain stem results in a selective loss of high frequencies. Vascular degeneration produces the classical syndrome of old-age hearing losses. Thalamic hearing disturbances are characterized by diplacusis and persistence of acoustic impressions. Also cerebral diseases can produce positive recruitment (which has been denied by several writers). Middle ear troubles do not have cerebral causes. In cases of unilateral affection of the temporal lobe, diminished hearing in the opposite ear is typical as well as poor perception of 'mutilated' speech resulting from the filtering out of all frequencies over 500 cps. As to the 'higher hearing performances' there might be a severe disturbance of speech-hearing despite normal hearing for tones, called 'schizacousis' by Kobrak. Accelerated speech (250 to 500 words per minute) can be understood in each ear only by cases of brain tumor not involving the temporal lobe, if loudness is increased; if the temporal lobe is involved, only the opposite ear needs increased loudness. Two other techniques are discussed. (1) Methods for examining the ability of patients to complete words which were offered to them acoustically only in part. Patients with brain lesions have a diminished ability to fill in the missing parts. (2) The technique of presenting speech alternately to each ear at the rate of 1 to 50 times per second. These tests show characteristic differences between normal and hard of hearing people in which no brain trouble is responsible for the hearing defect and those in which brain disease is responsible. *(E.F.)*

96. MATZKER, J., and WELKER, H., Die prüfung des richtungshörens zum nachweis und zu topischen diagnostik von hirnerkrankungen. (Testing of directional hearing for detecting and localizing diagnosis of diseases of the brain.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 277-294.

Signals, separated by the briefest of time intervals were applied to the two ears, and the directional hearing tested in this way was found to be increasingly less accurate with advancing years. A technique was found of recording the experimental results on a 'directional band' and used on patients with cerebral disease. The results were found to differ from those expected for the appropriate age groups, and provided important clues in detecting and sometimes localizing lesions in the brain. The limitations of the method, which is inapplicable in the presence of conductive or perceptive deafness, are discussed. The 'directional band' is likely to become a useful test in the diagnosis of cerebral disease. *(Excerpta Medica, XI)*

97. MENZEL, O., Clinical efficiency in compensation audiometry. *J. speech hearing Dis.*, 25, 1960, 49-54.

The object of this study was to determine whether the order and sequence in which several types of audiometric tests (1. pure-tone air and bone audiometry, 2. electrodermal response audiometry, and 3. speech audiometry) are administered have any effect on the incidence of nonorganic components of hearing loss (malingering). The subjects, 450 veterans examined for compensation purposes, were divided into six experimental groups, each of which was given the series of tests in one of the six possible sequences. The tests utilizing voluntary responses to speech stimulation were

always presented in the following order regardless of the position of the speech audiometry section: Doerfler-Stewart (if binaural SRT exceeded 16 db), monaural SRT, speech Stenger (if SRT scores for the two ears differed by more than 16 db), shifting speech test (under same conditions as speech Stenger), and monaural PB-max. A subject was considered to exhibit a nonorganic component if two or more tests for nonorganic component yielded positive indications, or if a discrepancy of 6 db or more was found between any of the following: first SRT and best SRT, first P/T and best P/T (averaging thresholds for 500, 1000, and 2000 cps), first P/T and first SRT, first P/T and EDR, and first SRT and EDR. Repetitions of tests were deferred until completion of the first round of testing. To eliminate bias, different clinicians were assigned to each of the three test categories, none having knowledge of any previous test results. The results were as follows. The incidence of nonorganic hearing loss was considerably lower when conventional puretone audiometry was deferred than when it was the first test administered. Subjects exhibiting nonorganic components of hearing loss required a significantly greater number of tests than those who did not in order to obtain the organic hearing level. The Doerfler-Stewart test appears to be a sensitive detector of nonorganicity as well as an important device for discouraging the would-be malingerer. Further research exploring motivational aspects of clinical audiometric procedures along with concomitant aspects of problems of detection is needed. *(S.I.G.)*

98. MIODOŃSKI, J., The technique of the Weber test. *J. Laryngol. Otol.*, London, 74, 1960, 125-127.

Following a brief discussion of theories of the Weber effect, procedures are described and recommended for Weber-testing of patients whose 'reason' seems to prevent them from accurately reporting lateralization. They 'are instructed to pay attention to whether the "echo" of the tuning fork is evenly dispersed over the whole on the [*sic.*] head, or is stronger on one side.' In the case of patients whose responses are hesitant or contradictory, two forks are applied symmetrically to the two parietal regions. One fork vibrates; one does not. A 'patient who has previously been undecided now lateralizes in a decided manner.' The positions of the vibrating and the placebo fork are then reversed and the test is repeated. In 'training' the patient, forks of variations frequencies are used and these are placed on various regions of the head. *(C.L.)*

99. MÜLLER, E., and SPRENGER, FR., Klinische untersuchungen an operierten otosklerosen. (Clinical examinations in surgically treated otosclerosis.) *HNO*, Berlin, 7, 1959, 167-172.

Basing the diagnosis of otosclerosis on the endoscopical-roentgenoscopical findings on the one hand and on functional data on the other implies uncertainties which may considerably influence the final result of statistics. Seven hundred cases of otosclerosis verified by operation were examined from previously established viewpoints to obtain data regarding the etiology, which is still uncertain. The male-female ratio was 1:2.16 (Shambaugh Jr., 1:2.19). As regards age, there was an accumulation between the 30th and 50th year of life. In 26.5% of the patients, the first symptoms were observed between the ages of 30 and 40, but, since the onset is insidious, it can usually only be determined approximately. In 39% of cases there was a familial predisposition (Shambaugh Jr., 54.5%). In 59.3% of these the patients' direct ascendants were affected. An increase of the deafness due to pregnancy was observed in 51.6% of cases (Shambaugh Jr., 48.1%). Comparative audiometrical examinations suggested that sound conduction is impeded by pregnancy, possibly through activation of the fenestral focus. Audiometrical hearing loss in otosclerotic patients is represented in a table with regard to its symmetry and asymmetry; the consequent data concerning type and localization of otosclerotic stapedial fixation are discussed. Pneumatization of the mastoid processes was good in 86.5% of the cases with bilaterally equal development of the cellular structure, slightly impaired in 9.8%, and in only 3.7% were the mastoid processes compact. The proportion of compact mastoid processes among cases with a symmetrical degree of pneumatization was 32.8%. *(Excerpta Medica, XI)*

100. OMBRÉDANNE, M., Les surdités

congénitales par malformations ossiculaires. Leur traitement chirurgical. (Congenital deafness due to ossicular malformations; their surgical treatment.) *Ann. Oto-Laryngol.*, Paris, 76, 1959, 425-454.

The author presents 10 cases, which he divides into three groups: in the first group the malformation was an operative discovery; in the second there was some probability, disclosed by the clinical examination, that a malformation might be discovered; in the third malformation might be presumed to be due to the aspect of the audiogram. Clinically the main symptom is the deafness, which is conductive in type, not progressive, uni- or bilateral. Another important point is the absence of tinnitus. The author thinks that polycyclic tomographies are of great diagnostic value. Any one of the ossicles may show malformations. Sometimes more than one are abnormal. Functional results after surgery were good in 84% of the operations performed. The operative procedures vary, depending on the lesions. Sometimes it is sufficient to restore the mobility of the ossicular chain. In other cases it is necessary to perform a stapes mobilization. Finally, there are cases in which a fenestration of the horizontal semicircular canal must be performed. *(Excerpta Medica, XI)*

101. O'NEILL, J., Sudden unilateral hearing loss attributable to mumps. *J. speech hearing Dis.*, 25, 1960, 55-58.

A battery of audiometric tests (puretone air and bone, speech reception and discrimination, recruitment, and tests for functional hearing loss) was administered to six cases exhibiting clinical mumps without inflammation of the parotid gland. Four of these cases had definite indications of mumps (positive mumps viral antigen titers) and two probably had mumps (antibody titers that were presumptive for mumps). A typical pattern of audiometric test responses was obtained for these cases. Those giving definite indications of mumps had bone-conduction thresholds characteristically lower than their air thresholds, speech reception thresholds much higher than their average puretone loss, very low discrimination scores, and indications of recruitment. The possible mumps cases did not demonstrate recruitment, their discrimination scores were high, and one of the cases obtained similar bone and air thresholds. It is suggested that all cases exhibiting sudden unilateral hearing loss be administered serologic tests as part of the diagnostic workup. Also, repeated audiometric studies should be performed over several months to ascertain recovery of hearing function. Further research, especially with a more representative sample, is needed. *(S.I.G.)*

102. PALVA, T., and PULKKINEN, K., Hearing after surgery in chronically discharging ears. *Acta oto-laryngol.*, Stockholm, 51, 1960, 123-134.

Audiometric test results for 190 ears upon which tympoplastic surgery had been performed are presented. Using a final hearing level of 30 db as a criterion for successful surgery the authors report 72% success for cases treated with simple atticoantrotomy and 40% for cases treated with the columella effect. *(R.C.B.)*

103. PESTALOZZA, G., Studio comparativo sui risultati funzionali a distanza della fenestrazione labirintica con differenti tecniche chirurgiche. (Comparative research on late functional results of fenestration according to different surgical techniques.) *Arch. Ital. Otol. Rinol. Laringol.*, Milan, 69, 1958, 902-917.

A comparison is drawn between the results of fenestration according to the Lempert-Shambaugh technique and those obtained with Wullstein's technique in 198 cases examined audiometrically one to seven years after operation. In some cases, Wullstein's technique was modified, the incus and the head of the malleus being removed and the upper portion of the tympanum being freed from its epithelial layer so as to improve the bed of the free skin graft. As to the percentages of patients who reached the social threshold (30 db or more), no difference was observed between the different techniques. So far as the absolute auditory improvements are concerned, the results were slightly but constantly better in those operated on according to the Lempert-Shambaugh technique. A comparison was also made between the actual and the theoretical auditory gain, calculated according to Carhart's formula. The real auditory gain was greater than the theoretical gain in all C cases, having good results

in 47% of the B cases and in 21% of the A cases. Cases of group A: Carhart corrected bone transmission curve not less than 10 db for the 3 frequencies 500, 1000, and 2000. Cases of group B: corrected bone transmission curve more than 10 db for one of the 3 frequencies mentioned. Cases of group C: corrected bone transmission curve more than 10 db for all 3 frequencies mentioned. *(Excerpta Medica, XI)*

104. PFALTZ, C. R., and RICHTER, H. R., Die cochleo-vestibuläre symptomatologie des cervicalsyndroms. (The cochleovestibular symptomatology of the cervical syndrome.) *Arch. Ohr.-, Nas.-, u. Kehlk.-Heilk.*, Berlin, 172, 1958, 519-534.

Eighty-five patients were examined because of X-ray changes in their cervical vertebrae and clinical signs of the cervical syndrome, plus hearing and balance disorders. Audiograms showed no specific change characteristic in the cervical syndrome. Recruitment, always present, locates the disorder in Corti's organ. The cervical syndrome has no specific vestibular changes. The authors found vestibular changes in one-third of their cases, with spontaneous or provoked nystagmus, especially with torsion of the cervical spine. It is not possible to be sure whether positional transient nystagmus or neck torsion nystagmus is produced by peripheral, nuclear, or supranuclear disorders, because they are too discrete and cannot be taken into account for diagnosis. There are vestibular centers, in the dorsolateral corner of the medulla oblongata which can be affected by vasomotor disorders, due to the sparse arterial anastomosis. This might speak for the authors' three pictures: On one side spontaneous nystagmus and nystagmus produced by any position or torsion; pathological absence of caloric reaction; and on the other hand neurological symptoms pointing to vascular disturbance of the medulla oblongata. *(Excerpta Medica, XI)*

105. PICHLER, H., Experimenteller beitrag zur funktionsanalyse der schalleitungsstörungen. (Experimental contribution to function analysis of disturbances of the conduction of sound.) *Mschr. Ohrenheilk.*, 93, 1959, 129-134.

It is hypothesized that in cold calorization of the ear under certain modified conditions reflex contractions of short duration of the inner musculature of the ear may occur. By means of electrical stimulation it was possible to supply the first audiometrical proof of nonacoustical reflex contractions of the intra-aural musculature in man. It is possible to use the method of electrical induction of reflexes as a functional test in certain disturbances of the acoustic conductivity. Thus new avenues in diagnosis and prognosis might be possible in clinical practice. However, this feature still has to be studied in detail. *(Excerpta Medica, XI)*

106. ROSEN, S., Stapes Surgery. *Hearing Dealer*, 10(3), 1960, 12-13.

The author briefly describes mobilization at the neck or footplate of the stapes as well as the third step in the development of stapedial surgery, fenestration of the footplate. He reports the procedures that may be used to restore mild losses to normal hearing, or bring severe losses to the point where a hearing aid can be utilized with greater benefit. Statistical results of the three procedures he describes show significant improvement in 44 per cent of the neck procedures, 48 per cent of the footplate mobilizations, and 57 per cent of fenestration through the footplate. A survey of the first 100 cases by each procedure shows the improvement has been maintained for periods up to seven years in 84 per cent of the cases mobilized at the stapedial neck, 83 per cent of those mobilized at the footplate, and 90 per cent of those with fenestration of the footplate. *(D.A.H.)*

107. SEKUŁA, J., Badania nad ujednoliceniem proby cieplnej w przewleklym zapaleniu ucha środkowego. (Studies on the uniforming of the caloric tests in chronic otitis media.) *Otolaryngol. Polska*, Warsaw, 14, 1960, 1-38.

Taking into consideration different lesions of the middle ear, perforation of the drum, total defect of the drum, adhesions, etc., which make impossible a symmetrical caloric stimulation of both ears, the author looked for a uniform method of caloric tests. He put to the test the following methods: (1) applying a piece of cotton put into a metal tube with ether against the postero-superior wall of the meatus; (2) applying of an ear speculum provided with

a small metal container with a tube conducting the fluid to and from the ear; (3) by means of small isolating disks specially prepared and put on the level of annulus tympani; (4) by means of a thin rubber container with a conducting tube together with an isolation of the middle ear in cases of perforated drum. By means of the above mentioned methods, especially of the third and fourth ones, the results from both ears were uniform with a discrepancy of less than 20% in 80% of tests. In 50 patients with otitis media 4 indirect tests and 37 direct tests performed. Using the indirect tests the discrepancy between the two ears was less than 20% in 72% of cases, using the direct ones–only in 30%. These results prove that in over 40% of cases of otitis media the caloric test is not precise and does not permit a qualitative evaluation of the function of the vestibular system. The author stated that in spite of the great variety of the caloric conduction capacity of the inner ear and of different anatomical conditions of the middle ear the time of duration of nystagmus does not vary very much; the number of oscillations of the eyes, however, and especially the latency time of nystagmus are much less stable. *(Author's summary)*

108. SIROKÝ, J. and MIKULA, F., Neobvyklá porucha sluchu u nemocného s tabes dorsalis po bilaterální mezencefalické traktotomii. (Unusual acoustic disturbance in a patient suffering from tabes dorsalis, following bilateral mesencephalic tractotomy.) *Československá Otolaryngol.*, Prague, 9, 1960, 111-119.

Conservative treatment failing, a bilateral mesencephalic tractotomy was performed in a patient suffering for 19 years from severe gastric crises, which necessitated his being hospitalized 40 times. The surgical intervention caused a lesion of the acoustic pathways which resulted in interesting manifestations in the ear. A few hours after operation complete deafness occurred which improved partially later on. In the course of six months after operation substantial changes in the understanding of loud speaking developed without important changes in the threshold for pure tones and in neurological findings. Also a lesion of directional hearing was ascertained. The perception of the pitch of tones was changed in a remarkable way. In binaural comparison of the pitch of tones the patient perceived tones differing up to a sixth as of the same pitch but always so that the tone perceived was the higher one. The threshold difference was, consequently, considerably increased. This examination confirmed the theoretical basis of some audiological examinations. An increased camouflage of pure tones and an unchanged threshold-difference for threshold intensity were found. *(Authors' summary)*

109. TERKILDSEN, K., An evaluation of perceptive hearing losses in children, based on recruitment determinations. *Acta. oto-laryngol.*, Stockholm, 51, 1960, 476-484.

Results obtained for 127 children enrolled in schools for the hard of hearing show that children whose hearing disorders were prenatal demonstrated recruitment. Those whose hearing disorders were due to postnatal diseases did not show recruitment and are presumably retrocochlear. Children with paranatal disease showed no clear trend with respect to recruitment. The author discusses the problems encountered in using amplification as a basis of educating these children. *(R.C.B.)*

110. UCHYTIL, B., Kalorické vyšetřování vestibulárního analyzátoru pomocí chladného kysliku. (Caloric examination of the vestibular analyzer by means of cold oxygen.) *Československá Otolaryngol.*, Prague, 9, 1960, 153-156.

In the present paper the author emphasizes the advantages of examining the vestibular analyser by cold oxygen or air, as compared with cold water and an apparatus for the above examination is described. At a constant pressure of oxygen or air 50 mm Hg is driven over a cooling bath under visual control to the posterior upper wall of the auditory meatus, its temperature at the orifice reaching the ear being +21° C. Twenty subjects were examined who did not suffer from any vestibular complaints and a latency of the nystagmus of 10-20 secs. was revealed, the duration of the nystagmus being 35-70 secs., in one instance 87 and 90 secs. In patients with chronic otitis the perforations were covered, according to their size, with cotton wool or cellophane soaked with sterile oils. This

method can be used as part of comprehensive examinations. *(Author's summary)*

111. ZÖLLNER, F., Bisherige erfahrungen mit der stapes-mobilisation nach Rosen. (Results of stapes mobilization.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 410-421.

The author's method of mobilization as practised since 1954 aims at restoring function to the thin parts of the footplate in order to avoid larger bony wounds. The procedure is adapted to the findings and both mono- and bi-crural mobilizations are practised accordingly. While the drilling of bony masses right into the vestibule is not advisable, it is useful in some cases to widen the access to the niche of the oval window in order to permit free movement of the crura. Absolute haemostasis is essential and very fine electrodes may be used for this. A vestibulotomy is not necessary and the liberation of much labyrinthine fluid has no advantage, while increasing the difficulty of checking the hearing during the operation. Since 1956 the percentage of successful results has risen to 89% and it is thus unnecessary to introduce complicated methods which endanger the integrity of the labyrinth. The loss of the hearing improvement in the first few days is regarded as an indication for re-exploration. It is in the nature of the disease process that some of the improvements in hearing may be unavoidably lost. Nevertheless, mobilization offers so many advantages with negligible risks, that it is recommended as the first operation to be practised in most cases. *(Excerpta Medica, XI)*

EDUCATION

112. ARPAIA, R., Il metodo orale e le cause della sua inefficienza didattica. (The oral method and the cause of its didactic ineffectiveness.) *Udito Voce Parola*, 3, 1960, 45-65.

A brief study of the origin and evolution of the oral method in teaching the deaf shows that at present this method is not as effective as it used to be. The author explains how the Italian monk Pietro Ponce obtained practical results from the oral method developed by him, combined with writing, visual aids, formation of words, repetition of sounds, until deaf pupils learned to talk. The author believes that if we are to integrate the deaf successfully in a hearing society, we must go back to the original sources of Ponce, and others, to rediscover the principles, structural patterns, and teaching techniques that they used so successfully. Among the teaching techniques Ponce preferred the structural graphic form (writing) because, he claimed, the written word perceived by the eyes gave the deaf pupil a knowledge of the structure of the language which enabled him to learn oral language more easily. Another reason that induced Ponce to begin with written language rather than oral language was based on two elements: the one of sensorial and the other of psychological nature. The former tended to call attention to a stimulus of integral reception, as the graphic oral image, and the latter to provide, at the same time, deaf persons with a psychological interest for the phonetic reconstruction of speech. Thirty-six years after Ponce's death Paolo Bonet compiled his ideas and methods about the oral method and published the first book on the theory of teaching the deaf. Finally, the author discusses nursery schools. He believes they will achieve great success if they will follow a method based on the visual sensorial-perception: i.e., oral, motor, and oral-graphic perceptions, which are processes connected with the instinctive and spontaneous activities of children. *(I.C.L.)*

113. BLAIR, M. A., Administrative organization of the day class. *Volta Rev.*, 62, 1960, 22-23.

This paper discusses the planning of programs of day classes for hearing impaired children and adolescents, primary emphasis being placed on the necessity for continuity of services from nursery school through vocational placements. It discusses the location and size of classes; the needs within the community; and the selection of children for these classes. Four different types of services should be provided within a school system: 1. Speech correction services for those children who have hearing losses of such a nature that they need some help with articulation but who have no language involvement. 2. Counseling for the physically handicapped may be utilized for a few hard of hearing children. 3. Special integrated classes for some children who have

less serious problems but have developed language. 4. Special schools or classes for children who have severe hearing losses and who have little or no language. It is recommended that the classes be staffed by well-prepared teachers of the deaf. The paper also discusses special equipment, parent education, and financial support. *(J.M.)*

114. BLOOMER, H. H., Communication problems among aged county hospital patients. *Geriatrics*, 15, 1960, 291-295.

Of 62 patients studied at the Washtenaw County Hospital, 45% had impaired speech or language, 51% had perceptive hearing loss, 54% had some reading problems, and 61% had difficulty in writing. Recommendations included speech therapy, special facilities for reading, hearing aids, and social stimulation. *(J.C.S.)*

115. ELDRED, M. M., Education of the deaf. *Child-Fam. Dig.*, 14, 1960, 78-83.

This article written for parents indicates that deaf children are not only physically and educationally handicapped, but emotionally and socially so. The teaching of language is said to be the primary problem in the education of deaf children and the issue of teaching orally or manually is debated. The author, a newspaper columnist, feels that the combined method is better. She also speaks in favor of residential schools and preschool education. The aim of education, she concludes, should be to make it possible for deaf children to take their places in society, even though limited. *(L.E.C.)*

116. EWERTSEN, H. W., Die rehabilitation schwerhöriger. Bericht der Staatlichen Hörzentrale Kopenhagen. (Rehabilitation of the hard-of-hearing. Report of the State Rehabilitation Center, Copenhagen.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 37, 1958, 691-707.

This is a report on audiological rehabilitation as conducted by the State Hearing Center in Copenhagen in the years 1952-1957. Information is given about working methods, nature of auditory disturbances, distribution of the defects, effects of rehabilitation, and the way in which services will meet increased demands in the near future. According to the law of 1951, every Danish citizen, independent of age, income or personal means, has the right to receive any kind of prosthesis if needed, including hearing aids, all in the framework of an obligatory health insurance. Examination of the hard-of-hearing and decisions concerning rehabilitation procedures take place in the three hearing centers of Copenhagen, Aarhus and Odense. Altogether, 16 people are employed, including two physicians, one speech and hearing therapist, one engineer and a number of office clerks. The center includes the following departments: a medical auditory department, an electrotechnical one, a department for the manufacture of ear molds, an educational department and an office for the clerical work. The average examination of an adult takes one hour; that of a child, twice as long; half an hour is needed to take an impression for the ear mold and instruction in the use of the hearing aid. In addition to the taking of a case history, including hereditary disposition, sensitivity to noise, trauma, infectious diseases, and other factors which contribute to determine the etiology of auditory impairment, the ear, nose, and throat examination is followed by pure sound and speech audiometry; auditory discrimination and pain threshold are established, and the skill in visual speech perception is tested. The results of the medical examination decide whether a hearing aid, surgery or medication will become the treatment of choice for the patient. During the five years of its activity the center has examined 15,729 individuals, of whom 18.4% were not qualified to be equipped with a hearing aid. In those cases where the hearing loss was limited to one ear only, or not great enough to warrant an aid, the patients were advised to take part in a course in visual speech perception. A number of special problems were uncovered during the examination of children, problems which could be solved only in close cooperation with other health agencies and with specialists. Many children affected by a hearing loss may be suffering from another disease. It is of primary importance to make a correct diagnosis concerning the etiology of the auditory deficiency. The task of the electro-technical department consists not only in checking whether the hearing aid functions to the satisfaction of its wearer, but also to detect, by means of

an artificial ear, any breakdowns or technical defects. The speech and hearing therapist of the educational department is instrumental in training patients to make the best use of their aids during all kinds of social situations, and in assigning them, in accordance with their needs, to auditory training, speech correction, or visual speech perception instruction. *(Excerpta Medica, XIX)*

117. EWING, A. W. G., A new chapter: a report from the department of education of the deaf. *Teach. Deaf*, Birmingham, 58, 1960, 17-20.

The need for more qualified teachers of the deaf in England is mainly due to (1) the establishment of growing numbers of units for educating partially deaf children in schools for hearing children, (2) the need for teachers to provide auditory training in audiology clinics, and (3) the trend to appoint 'peripatetic' teachers for partially deaf pupils in schools for the hearing. Present courses in education of the deaf in the Department of the Deaf of Manchester University lead to Certificate for Teachers of the Deaf and Diploma in Audiology. Teaching and research relating to detection, assessment, and treatment of deafness in childhood by local public health departments and hospitals, and improved methods of education of the deaf are carried on by the department. New techniques of testing hearing aids and methods of experimental phonetics are potential sources of help to teachers. *(M.S.K.)*

118. GADDI, A., I Gesuiti e il metodo orale in Italia. (The Jesuits and the oral method in Italy.) *Udito Voce Parola*, 3, 1960, 1-12.

A study of the origins of teaching the deaf in Italy shows that the first school for teaching the deaf, using the oral method, was established in Rome in the year 1784 by Abbot Tommasso Silvestri, who was a pupil of the famous French instructor of the deaf, Abbé M. de l'Épée. There are previous publications by the Italian Jesuits Cabeo, Lana-Terzari, and Sanvitale which show that an attempt had been made to teach the deaf to speak. Although the school in Rome can be considered useful as a first factor in trying to bring culture to the deaf, it was just a beginning, and it was felt at the time that the purpose of the school had not been completely realized. After Silvestri's premature death, two other Spanish Jesuits, Andres and Panduro, published high praises about the school in Rome giving the impression that it had obtained great results in teaching the deaf. These publications were probably for the purpose of influencing public opinion to reopen the school which, unfortunately, had been abandoned after the founder's death. *(I.C.L.)*

119. HEFFLER, A. J., The Montefiore Home hearing conservation program. *Geriatrics*, 15, 1960, 180-186.

Of 147 residents of the Montefiore Home for the Aged (mean age: 77 years), 32% had normal hearing: a speech range loss not more than 15 db in the better ear. An additional 35% had only mild losses: speech frequency average loss in the better ear not greater than 30 db. Although 26% of the group had a better ear average loss greater than 30 db, few of these persons had had previous direct experience with hearing aids. Recommendations included hearing aids, and lip reading instruction (despite visual problems in many patients). *(J.C.S.)*

120. HOOPLE, G. D., Care of hearing in the elderly. *Geriatrics*, 15, 1960, 106-109.

The care of hearing in elderly persons should begin during childhood (by medical attention to ear infections) or prenatally (by 'selection' of progenitors with good hearing). Causes of hearing loss in older people also operate in younger persons. Perhaps even in presbycusis aging itself is less important than accumulative ear insults. Older people may get help from (1) knowing how rare total deafness is, (2) having speakers talk slowly after gaining the listener's attention, (3) reducing environmental noise, and (4) determining if a hearing aid will really help. In turn, society needs consideration for older people with hearing problems *(J.C.S.)*

121. IANDOLI, E. W., WINKLER, P., and BARTON, L., Preschool training program. *Volta Rev.*, 62, 1960, 63-65.

The philosophy of the conservation of hearing center at Albany Hospital is not only concerned with the diagnosis of deaf-

ness, its causes and degrees, but also with rehabilitation of the patient. It is felt by the staff that children from birth to school age present the greatest problem. The aim of their preschool program is to instruct and guide the child and his parents from diagnosis of deafness through the formative years until the child reaches the age when formal instruction can be started. The center's program is divided into four categories: sense training, auditory training, speech reading, and speech and language development. The staff feels very strongly that individual aids should not be placed on children until they are able to recognize amplified sounds and also begin to produce sounds. Desk model amplifying units are therefore loaned for home training programs for a period of time until the child is ready to use his own hearing instrument. The parent program is an integral part of the preschool setting at the center. *(J.M.)*

122. LING, D., Provision of services for deaf children in Reading. *Teach. Deaf*, Birmingham, 58, 1960, 34-53.

Services for deaf children in the borough of Reading, England, through cooperation of educational, school health, and hospital authorities include: (1) detection, diagnosis, and medical treatment of children with defective hearing, in early infancy, from 2-4 years, and from 5-7, (2) special educational treatment of children with defective hearing, under 3 years of age through parent guidance, from 3½-7 years in special class attached to nursery or infant school, from 7-11 years in a special class attached to junior school, from 11 plus in ordinary schools by part time specialist teaching, of a slight degree within normal classes from 7-15 years, (3) social and welfare work for partially deaf children on leaving school. Improvements in services since 1955 have been in early detection before two years of age, provision of hearing aids, and improvement of opportunity for children with a hearing loss averaging between 60 and 90 decibels in the better ear over the speech range. This group may be regarded as potentially deaf or potentially hearing depending on the form of special educational treatment they receive. *(M.S.K.)*

123. MASPETIOL, R., Principes et exigences de l'éducation de l'enfant sourd d'âge pré-scolaire. (Principles and requirements of the education of the deaf child of preschool age.) *Readaptation*, 59, 1959, 20-22.

There are three aspects to such an education: (1) the discovery of deafness in children over two years of age; any delay of speech necessitates a complete audiometric and psychological examination of the child, and an investigation of the education possibilities of its family. (2) The education must aim first at the development of the child's intelligence by means of instructive games and supported by the visual sense, then at lip reading, and finally at the training of hearing with the aid of a hearing aid, if residual hearing is sufficient. Early use of a hearing aid is not harmful. (3) To realize all this in practice requires close cooperation between the specialized center (otologist, neuro-psychiatrist, records department) and the family (the mother must keep the child occupied at all times) because there exist very few boarding schools for deaf children of preschool age. Summing up it can be said that it is desirable that the education of the deaf child should begin at the age of two, and is predominantly the task of the parents, working under the guidance and periodic control of a qualified expert. *(Excerpta Medica, XI)*

124. RASSMUSSEN, M., Education of the deaf in Denmark. *Volta Rev.*, 62, 1960, 143-144.

This article gives a brief history of the forming of schools for the deaf in Denmark. The methods of communication employed at different times up to the present day are discussed. The state gives hearing aids to all deaf children as early as possible. They have home training programs, kindergartens in which the hearing children and the deaf children are enrolled in the same classes, and residential school placement for those who do not have special education within their community. It also discusses the education requirements for teachers of the deaf in that country. *(J.M.)*

125. VAN UDEN, A., Observations on the education of deaf in the Netherlands and the U. S. A. *Volta Rev.*, 62, 1960, 10-14.

The author, who traveled in the United

States in 1958, reports that in his country education of the deaf changed from manualism to oralism in 1906. They adopted the natural method of teaching speech in 1931. In 1946 the aural-oral method was introduced, utilizing lip reading, speech, and the continuous use of hearing aids. Netherlands philosophy is contrasted with current American views. Specifically some of the United States schools use only the oral methods of communication while others use the oral methods approach in the beginning years of instruction with an increased use of manualism in the advanced years of school. The author lists a number of conclusions that will assist the staff of the Institute voor Dooftsommen at St. Michielsgestels to develop a better program in the preschool years for the multiply handicapped, to evaluate vocational training, and to expand objective research as a part of their educational program *(J.M.)*

126. VAN WYK, M. K., Integration—a look at the total picture. *Volta Rev.*, 62, 1960, 69-70, 82.

The author feels that integrating deaf children in the hearing world means more than just educational integration. She points out the need for social, recreational, and vocational integration as well. She discusses this in four areas, infancy to about three years of age, preschool (three to six years), school years (five and a half to twenty), and the adult years. The author points out that the brighter child who is deaf can compete with normal children in the elementary grades to a better advantage than can the deaf child of average or lower intelligence. Integration is best accomplished where classes are small, and the teacher looks upon the program as an opportunity. It is also recommended that there must be a special school for hearing handicapped available to help prepare and carry out the programs of strong supportive help; and there should be no attempt at integration before speech and language skills are well established. In conclusion she states that the students should be carefully screened prior to admittance in an integrated program. *(J.M.)*

127. WINCHESTER, R. A., Modern concepts of aural rehabilitation. *Audecibel*, 9(3), 1960, 10-11.

The author discusses the improving cooperation between the hearing aid industry, otology, and clinical audiology. He feels the influences producing the change in rehabilitation principles and practice stem from: (1) advances in medical and surgical treatment; (2) advances in hearing aid design and manufacture; and (3) increased understanding of the psychophysics of deafness and the psychology of communication. Advances in medical treatment have resulted in fewer conductive loss cases having to seek amplification to the point where most hearing aid cases are 'problem' cases. Advanced hearing aid design has resulted in the fitting of cases who previously could not have worn an aid. Clinical audiology has questioned the effectiveness of present hearing-aid evaluation techniques, and better techniques are being sought. *(D.A.H.)*

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128. BOCHENEK, Z., and MITKIEWICZ-SZRENIAWSKA, W., Odległe powikłania błędnikowe i wewnątrzczaszkowe po operacjach na uchu środkowym. (Later labyrinthine and intracranial complications following operations on the middle ear.) *Otolaryngol. Polska*, Warsaw, 14, 1960, 111-119.

The authors describe 12 cases after radical and conservative mastoidectomy. From 1947-1958 these patients underwent a second operation in the Otolaryngological Clinic in Warsaw on account of later labyrinthine and intracranial complications. Among them three suffered from labyrinthitis and fistula in the wall of the inner ear, one from peripheric paralysis of the facial nerve, one from perisinusal abscess and thrombosis of the sigmoid sinus, three from extradural abscess and four from purulent meningitis. The causes of these various complications are discussed. There is no doubt that one of the main causes is the character of the original ear disease (especially inflammation due to scarlet fever), another the fact that the first operation was not sufficiently radical and that insufficient care was taken of the postoperation cavity. Complications were noted frequently among those patients, who had been operated on in childhood. Six of the twelve patients operated on for the second time were found to have cholesteatoma. In conclusion, the authors

state that there are more cases of later labyrinthine and intracranial complications after radical and conservative mastoidectomies than the few papers written up to date about this subject would lead one to suppose. *(Authors' summary)*

129. CERONI, T., PANEBIANCO, G., and SCASSELLATI SFORZOLINI, G., Studio della reflettività vestibolare in soggetti affetti da glaucoma cronico semplice. Ricerche elettronistagmografiche. (A study of vestibular reflectivity in patients with chronic simple glaucoma. Electronystagmographic investigations.) *Riv. Oto-Neuro-Oftalmol.*, Bologna, 33, 1958, 172-194.

It is nowadays recognized that patients with glaucoma also have hypacousia; the authors have resumed the study of this problem, since a precise method for registration of the vestibular response is now available, i.e., the electronystagmometer. In 40 patients with chronic glaucoma, audiometric tests revealed hypacousia of perceptive type in 95% of the cases; 32 subjects showed an auditory deficiency of perceptive type, a dip which selectively involved a group of frequencies in the right half of the tone field, while 6 showed presbycousis and 2 showed no cochlear disturbances at all. In 32 subjects with hypacousia the authors were able to demonstrate asymmetry of vestibular function; they found this not only in those with auditory deficiencies, but also in the two subjects with no cochlear damage. On the basis of the findings, it is concluded that disturbances of the posterior labyrinth are frequently encountered in subjects with chronic simple glaucoma with 'dip' hypacousia, and even in those without cochlear lesions. Moreover, tests of the vestibular function performed some time later, after normalization of the ocular tension, revealed modifications of the labyrinthine response in 25% of the cases. *(Excerpta Medica, XX)*

130. DERKS, A. C. W., The bacteriological prevention of relapses and complications after a first attack of otitis media in children. *Practica Oto-Rhino-Laryngol.*, Basel, 22, 1960, 131-143.

On the basis of bacteriological data, the author recommends an antiseptic method of treatment of acute otitis media, not only during myringotomy, but also during the whole aftertreatment. Application of Burrow's cotton plug prevents penetration of mieroorganisms from outside into the cavum tympany, and ensures adequate drainage of pus. There was not a single complication in all cases of primary acute otitis media treated with this method, while the recovery period was considerably shorter as compared to that of a control group. The number of relapses in the group treated with antibiotics is significantly lower than in the non-antibiotic group. It is advisable to administer a broad-spectrum antibiotic in cases of hemophilus infection, i.e., as soon as possible in a primary attack, because the antibiotic is found to be considerably less active in a second hemophilus attack in cases originally treated non-antibiotically. *(Author's summary)*

131. DIX, M. R., and HALLPIKE, C. S., Discussion on acoustic neuroma. *Laryngoscope*, 70, 1960, 105-122.

This paper, reprinted from the Proceedings of the Royal Society of Medicine (1958), summarizes the vestibular and cochlear findings in 95 patients suffering from tumors of, or affecting, the VIIIth nerve. The cases are subdivided into: Group I, 70 patients with tumors (neurofibromata) of the VIIIth nerve itself; and Group II, 25 patients with tumors arising within or invading the cerebello-pontine angle, and consequently the VIIIth nerve. Vestibular function was abnormal in all cases according to the caloric test at 30° and 44° C. The early vestibular symptoms and the preservation of some cochlear function in many cases of total vestibular inexcitability in the first group of patients supports previous views 'of a lesion . . . originating in the vestibular elements of the VIIIth nerve.' The average hearing level for 500, 1000, and 2000 cps was 53 db for the 70 patients in Group I, and 42 db for the patients in Group II. Loudness recruitment was present in only 10% of all 69 patients for whom a binaural loudness balance test was feasible. In only a 'few' of these was recruitment complete. The authors hold to their previous explanation of recruitment in these cases 'as being due to changes in the cochlear end-organ resulting from interference by tumour pressure with the cochlear blood supply.' *(R.G.)*

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132. DUNLOP, D. M., The dangers of antibiotic treatment. *Brit. med. Bull.*, London, 16(1), 1960, 67-72.

Thirteen antibiotics are reviewed as to deleterious side-effects. Of particular note are the following: damage to the eighth cranial nerve may result in direct proportion to the frequency and duration of administration of streptomycin (especially to cochlear component) and dihydrostreptomycin (mainly to the vestibular portion) alone. Risk of ototoxicity is increased with impaired renal function. Combined isoniazid and streptomycin therapy in tuberculous meningitis has drastically reduced the incidence of complete deafness as a side-effect. Parenteral administration of neomycin may produce eighth nerve damage, similar to that caused by streptomycin, but arising more rapidly. With impaired renal function, Vancomycin may damage the acoustic nerve, causing deafness or tinnitus. *(J.C.S.)*

133. FALK, P., Die anatomischen resultate und die funktionellen ergebnisse nach schonender radikaloperation bei chronischen mittelohreiterungen. (The anatomical and functional results of radical preventive surgery in chronic otitis media.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 6, 1960, 331-350.

The anatomical and functional results of 116 modified radical mastoidectomies, preserving the maximum tissue possible, are given. The knowledge gained by tympanoplastic surgery was not yet available in this early series of cases. In a high proportion of the cases where the ossicular chain was intact, but also in cases in which it was damaged, the author achieved a spontaneous shutting off of the ear drum as well as good postoperative hearing results. Attic perforations leaving most of the tympanic membrane intact seemed to be best suited for the operation with regard to hearing results and closing of the ear drum. The resultant hearing was good in all cases after conservative surgery for defects in the semicircular canal. These results support the methods of treating chronic suppurative otitis media by careful conservative surgery, based on the physiology of hearing. A modified radical mastoidectomy is preferred to a primary tympanoplasty shutting off the middle ear cleft. In the event of an unsatisfactory functional result after the ear is healed, a secondary tympanoplasty may later be performed. *(Author's summary)*

134. KOIKE, H., Adenoids and audition. (Japanese text.) *Otol. Fukuoka*, Fukuoka, 5, 1959, 1-24.

Audiograms were obtained on 1525 primary school students and 1548 junior high school students, a total of 3073 students. The audiograms were examined for those students who were in need of adenoidectomy. Adenoidectomy was then performed and the resultant changes in audition noted. Of those students who had hearing losses (17.8% of the total) diseased adenoids were observed in 65% of the primary school students and in 54% of the high school students. Most hearing losses in these students were of the conductive type with the hearing thresholds as measured by bone conduction being normal in most instances. Air conduction audiograms obtained after the performance of adenoidectomy showed restoration of normal hearing thresholds in 97% of the cases within a month after operation. *(S.P.Q.)*

135. LORBER, J., Treatment of tuberculous meningitis. *Brit. med. J.*, London, 1, 1960, 1309-1312.

In 12 years, 210 consecutive admissions of tuberculous meningitis showed increased rate of survival and increased freedom from neurological sequelae. These changes were paralleled by changes in medication, from streptomycin only to the addition of P.A.S. and, later, isoniazid. Great difficulty may be expected if the patient is under three years of age and unconscious on admission. *(J.C.S.)*

136. MONTMOLLIN, D. de., Etude du traumatisme acoustique opératoire dans les interventions de l'oreille. (Study of acoustic trauma caused by surgical operations.) *Practica Oto-Rhino-Laryngol.*, Basel, 22, 1960, 81-94.

In this paper the author demonstrates that the inner ear can be damaged during surgical operation by the instruments used, especially the drill and the chisel. The intensity level which can cause such injuries is reached or even exceeded (116 db with the bone drill, and up to 140 db with the chisel). The noise produced by these instruments is enough to cause acoustic trauma.

Systematic examinations of audiograms after operation in 776 cases of otosclerosis, where both sides were operated on, and in 265 cases after radical mastoidectomy suggest quite clearly the possibility of acoustic injury during operation on the temporal bone. In the otosclerosis cases the number of such injuries was 5.8% compared with 7.9% in the case of the radical operation. The incidence is therefore relatively small and spontaneous recovery of the dip in the curve at C_5 is quite striking. *(Author's summary)*

137. MOTTA, G., and PROFAZIO, A., Ricerche sulla funzionalità vestibolare nei calderai. (Vestibular function of boiler-makers.) *Riv. Oto-Neuro-Oftalmol.*, Bologna, 34, 1959, 386-399.

The authors made this research to establish the existence of vestibular troubles in patients with professional deafness, caused by chronic acoustic trauma. The observations referred to concern 66 boiler-makers with 5 to 20 years of work, in whom the occasional spontaneous tonic deviations were looked for and the labyrinthine reflexes were studied by means of the caloric test according to the method of Fitzgerald and Hallpike. Also, the duration of nystagmus as well as the number of eye movements and the duration of vertiginous sensation were considered. In no case were spontaneous signs of vestibular disturbances noticed. The caloric test showed that: (a) in 59 subjects (81%) the 2 vestibular apparatuses were balanced and their reflectivity could be considered as normal; (b) in 5 cases (8%) there was a single directional prevalence of the nystagmus; in these subjects it is not possible to affirm the existence of a vestibular lesion, as crossed asymmetries can be found in normal individuals with even higher frequency; (c) in 7 cases (11%) a total asymmetry was present; as a consequence it was necessary to admit the existence of functional troubles, especially concerning one labyrinth. They can be explained by the position of boiler-makers during their work, owing to which one ear is more exposed to noise than the other. This hypothesis is supported by the fact that in these workmen the lesions are very frequently more serious on one side. It is, however, not excluded that the beginning of the vestibular lesions has been favored by the existence of other pathological factors, which the authors have not been able to identify clinically. *(Excerpta Medica, XI)*

138. PFALTZ, V. C. R., BONHOTE, V., and EGGENSCHWILER, E., Die endaurale tympanoplastik. (Endaural tympanoplasty.) *Practica Oto-Rhino-Laryngol.*, Basel, 22, 1960, 111-122.

The paper is based on the evaluation of operative results in 87 cases of cholesteatomatous otitis media and 64 cases of chronic tubo-tympanic disease. Two different operative procedures are compared: the so-called conservative radical operation with plastic repair of the defect of the tympanic membrane by means of a split graft, and the endaural tympanoplasty. The tympanoplasty after Wullstein and Zöllner seems undoubtedly the better procedure; not only with regard to the functional result of the operation but also in respect of the need for further otological treatment. Review of the cases for 1-4 years after the operation have proved that this is not only a temporary success but a permanent result. *(Authors' summary)*

139. PFÄNDLER, U., and SCHNYDER, E., Die rezessive taubstummheit im Werdenberg (St. Gallen). (Recessive deafmutism in Werdenberg (St. Gallen). *Bull. Schweiz. Akad. Med. Wiss.*, 15, 1959, 178-192.

In the East-Swiss district of Werdenberg, the frequent appearance of recessive deafmutism is examined from the clinical, genetic, and statistical demographic point of view. By the use of the Weinberg sib method, the authors found only 9.5% deafmutes in the families, instead of 25% as would be expected theoretically from a simple recessive inheritance. An attempt is made to explain the occurrence of this low value. The possibility of a recessive bifactorial mode of inheritance, or the existence of a semilethal deafmute factor, is discussed. *(Excerpta Medica, XI)*

140. PORTMANN, M., Procedure of 'interposition' for otosclerotic deafness. *Laryngoscope*, 70, 1960, 166-174.

In the 'interposition' technic, all or part of the stapes is isolated from the edge of the oval window, and a graft is inserted between the free stapes, or a portion of it, and

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the oval window. This technic has been more successful than previous procedures for stapes surgery in closing the air-bone gap. *(R.G.)*

141. PREOBRAZHENSKY, N. A., and SVETLAEV, A. P., The technique of mobilizing the stapes in otosclerosis and adhesive otitis. (Russian text) *Vest. Oto-Rino-Laringol.*, Moscow, 21, 1959, 48-59.

In the treatment of patients with otosclerosis and adhesive otitis the author employed vibromassage and surgery for the mobilization of the stapes. Detailed experimental investigations proved the possibility of transmitting mechanical vibrations from the short prominence of the malleus to the foot plate of the stapes without traumatic destruction of anatomical structures of the middle ear. A rational technique for the employment of vibromassage was elaborated. Thirty-five patients with otosclerosis and 21 with adhesive otitis were under observation. Vibromassage was used in 28 patients and the operation for stapes mobilizations in 23; 5 patients were subjected to both vibromassage and surgical therapy. Satisfactory results were obtained. *(Excerpta Medica, XI)*

142. PROFAZIO, A., EMILIANI, G., and CERONI, T., I traumi cranici e i loro esiti a distanza sula funzionalità cocleovestibolare. (Cranial trauma and the long-term results on the cochleovestibular function.) *Riv. Oto-Neuro-Oftalmol.*, Bologna, 34, 1959, 72-96.

The authors examined 102 cases of cranial traumas; 64 with and 38 without fracture. The period of time after the trauma was always longer than two years. From the statistical survey of cases it appears that a sufficiently high percentage of subjects (79.5%) presents at long term from the trauma functional cochleovestibular lesions qualitatively analogous to those found at a short distance of time, but considerably smaller. With regard to the relation between site of trauma, frequency, and entity of damage, the authors observed that in the cases without fracture no exact correlation exists. On the basis of the audiometric characteristics the hearing damage could be considered of peripheral type in most cases; the vestibular damage appeared to be of peripheral type in 25 patients and of central type in 26 patients. *(Excerpta Medica, XIX)*

143. ROOT, H. D., AUST, J. B., and SULLIVAN, A. Jr., Snuff and cancer of the ear. *New Eng. J. Med.*, 262, 1960, 819-820.

This report of a case emanated from the University of Minnesota Medical School, Department of Surgery. The case, a 58-year-old bachelor farmer, had used snuff in the left ear daily to weekly since the age of 16. Although he did this in accordance with a local Indian custom, he attached no religious or superstitious significance to the practice. He reportedly wiped away the snuff several hours after placing it in his ear, but in view of his poor personal hygiene, the ear probably was continually exposed to the snuff. In addition, he usually carried a quid of snuff along the lower buccal-alveolar-ridge sulcus anteriorly. He had noted some burning and tingling in the left ear for about 3 months before admission, but he experienced no pain, tinnitus, or vertigo. A tender mass in the ear, which bled easily, proved in biopsy to be a squamous-cell carcinoma. Because of the palpable ipsilateral cervical lymph node, a left-sided radical neck dissection in continuity with a left auriculectomy was performed. The surgical specimen is depicted. Snuff, a finely pulverized tobacco preparation, has retained its popularity among the Midwestern populace. It is generally chewed or held as a quid in the oral vestibule between lip and alveolar ridge. The carcinogenic potential of tobacco derivatives has been well demonstrated on the skin of mice but no such effects have been clearly shown in man. *(M.N.)*

144. ROSSBERG, V. G., Menièresche krankheit und diencephale regulation. (Menière's disease and diencephalic regulation.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 39, 1960, 153-172.

Menière's disease is regarded as a disturbance of the diencephalic regulating mechanism localized especially in the region of the labyrinthine artery, and similar to other diseases of the vegetative nervous system. Changes in tonus of the autonomic nervous system result in critical changes in its functions, e.g., water metabolism. These result in the labyrinthine attacks which occur at

irregular intervals with constant organic and functional symptoms. The violent labyrinthine attacks of Menière's disease are unthinkable without the participation of the diencephalic vegetative system. In principle there are similarities with the extreme disturbance in epilepsy and the apparently localized vegetative disturbance in migraine, which occurs in three phases. The chronological sequence of events in Menière's disease also suggests a three-phased process. This special sequence of symptoms has been schematised for comparison with other manifestations of function regulation, such as are widely used in medicine and biology for the better understanding of various function regulating problems. The diencephalic pathogenesis of Menière's disease allows numerous exogenous and endogenous factors to become significant trigger stimuli. In a short survey of the therapeutic implications experimental medication with four main agents is recommended: stellate block, megaphen, diuretics and hydergin. *(Author's summary)*

145. SCHRÖDER, V. K., Soll die akute mittelohrentzündung antibiotisch behandelt verden? (Should acute inflammation of the middle ear be treated with antibiotics?) *Z. Laryngol. Rhinol Otol.*, Stuttgart, 39, 1960, 1-6.

House in Los Angeles and Dixon in Oxford have reported the virtual disappearance of mastoiditis after early treatment of acute otitis media with penicillin, and Bablik in Vienna has observed a reduction to 11% of the pre-war figure. In 1957 the incidence of mastoiditis at the Dresden-Friedrichstadt E.N.T. Clinic was still 71% of that in 1938. None of the operated cases had antibiotic treatment before admission and the local practitioners referring patients only rarely use penicillin. The early administration of penicillin in scarlet fever has almost eliminated the necrotising otitis media and those cholesteatomas arising as a result of it. Even with organisms of relatively low sensitivity, antibiotic treatment of infections should result in the healing of a large proportion of acute otitis without permanent anatomical or functional changes. Thus all febrile cases of acute otitis media should be routinely treated in the early stages with full doses of antibiotics. The convalescent patient should be confined to bed even after the early and rapid resolution of the inflammatory symptoms, while the restoration of his hearing is carefully watched and encouraged whenever necessary. *(Author's summary)*

146. ŠERCER, A., and KRMPOTIĆ, J., En suivant la trace de l'otospongiose dans le royaume des animaux. (The track of otosclerosis in the animal kingdom.) *Rev. Laryngol. Otol. Rhinol.*, Bordeaux, 80, 1959, 489-537

Supposing that it could be of scientific interest to establish whether spontaneous otosclerosis exists in animals, the authors studied the literature of the last 60 years dealing with this problem. Comparing the bone pathology in animals and in man they came to the conclusion that nearly all the diseases of the bone and of the ear known in man exist also in animals, with only one exception: spontaneous otosclerosis. *(Excerpta Medica, XI)*

147. ŠERCER, A., and KRMPOTIĆ, J., Über die ursache der progressiven altersschwerhörigkeit (presbyacusis). (The cause of progressive presbycousis.) *Acta Oto-Laryngol.*, Stockholm, suppl. 143, 1958, 6-36.

Studies of 60 skulls, i.e., 120 temporal bones, from the 6th foetal month to the 85th year of life showed that with advancing age hyperostotic deposits develop at the fundus of the internal auditory meatus, at the same time as on the inner surface of other cranial bones, which process narrows the remaining openings of the tractus spiralis foraminosus and thus exerts a continuous pressure on the nerve twigs running through it. The gradual hyperostotic process at the floor of the auditory meatus compresses more and more nerve fibres in the course of years and decades, and produces the characteristic picture of progressive hardness of hearing. Consequently, the atrophy of the nerve fibres is the primary result of this process and the degeneration of the specific elements in the labyrinth (spiral ganglion) is to be regarded as secondary. Disregarding all contributory factors possibly involved in presbycousis (processes of the middle ear, arteriosclerosis, toxic influences, avitaminoses, hormonal deficiencies, etc.), senile hyperostosis of the cranial bones is to be considered as the pri-

XUM

mary cause of pure idiopathic presbycousis. This is only one of the phenomena of a general physiological process termed by the authors hyperostosis senilis progressiva meatus acoustici interni. *(Excerpta Medica, XI)*

148. SOILA, P., Congenital anomalies of the sound-conducting organs. *Acta Radiol.*, Stockholm, 50, 1958, 444-452.

Congenital anomalies of the sound-conducting organs are described from material on 84 ears (74 patients). A division into four grades according to the condition of the ossicles and the tympanic cavity is suggested. Malformations of the external auditory canal and the temporomandibular joint seem to follow the deformity of the middle ear. In three cases a tympanic cavity which had been demonstrated roentgenographically was not reached at operation, and in six cases the roentgen examination failed to reveal a cavity which was later found by the surgeon. *(Excerpta Medica, XI)*

149. SORIN, E., La chaîne ossiculaire dans les malformations congénitales de l'oreille. (The ossicular chain in congenital malformations of the ear.) *Rev. Laryngol. Otol. Rhinol.*, Bordeaux, 80, 1959, 26-77.

The congenital affections of the ossicular chain take place during the first two or three months of pregnancy, and they may lead to agenesis or malformation, causing transmission deafness of permanent and static character. Under these conditions, the incus and the malleus generally appear as a shapeless bony mass; histologically, one can see a quantitative modification of the bony structure: such disorder is to be attributed to the absence or to the alteration of the morphogenetic factor. From the etiopathogenetic point of view, in order to understand the problem more clearly, some factors, such as the recent advances on genetic constitution, embryonic physiology, and the comparative anatomy of the hyomandibular-auricular region should be held in mind. Surgical problems concerning functional improvement in subjects affected with congenital malformations of the ear are discussed. *(Excerpta Medica, XI)*

150. SUDAKA, J., Contribution à l'étude des surdités labryinthiques brusques. (Study of sudden labyrinthine deafness.) *Rev. Laryngol. Otol. Rhinol.*, Bordeaux, 80, 1959, 375-383.

The case histories of six cases of sudden deafness are described. In some cases, spontaneous vestibular phenomena could likewise be demonstrated. Two groups are distinguished. In the first group, there was a traumatic cause, trauma of the cervical spinal column, in the past history; in the second group, there was a preceding infectious period. Whereas in the first group the prognosis was completely unfavorable so far as hearing is concerned, in the second group auditory improvements were obtained, also by making use of antihistaminics and cortisone treatment. *(Excerpta Medica, XI)*

151. TANIEWSKI, J., O leczeniu nawrotowego zapalenia wyrostka sutkowatego. (On the treatment of recurrent mastoiditis.) *Otolaryngol. Polska*, Warsaw, 14, 1960, 51-54.

In cases of recurrent mastoiditis or of abscess in the scar appearing some time after mastoidectomy a "modified mastoidectomy" may be performed. It differs from an ordinary one in lowering the posterior wall of the meatus and forming a meatal flap which is introduced into the operation cavity. As the external meatus has a shrinking tendency one should perform additionally a "superficial plastic repair" from the skin of the meatus. The retroauricular wound is sutured and a tampon is introduced through the external meatus. The free communication between the operation cavity and the external meatus protects against recurrent mastoiditis. *(Author's summary)*

152. UCHYTIL, B., and PLCH, J., Vyšetřování činnosti vestibulárního ústroji u nemocnych s vleklým středoušním zánětem a po radikálních operacích. (Functional examination of the vestibular organ in patients with chronic otitis and after radical operations.) *Čsl. Otolaryngol.*, Prague, 8, 1959, 218-221.

Functional changes of the vestibular apparatus in patients with chronic otitis and after its operation, which can be confirmed by examination with cold and warm air, Barány's rotation and cupulometry, are explained by the extent, site, and type of changes which have developed on the sensory epithelium or changes causing stenosis

of the lumen of the membranous labyrinth. When the lumen of the labyrinth is reduced, the circulation of endolymph is probably impaired, which affects the magnitude of the nystagmic response to stimulation, as is shown instructively by the cupulometric examination, particularly at greater angular speeds. In degenerative changes of the sensory epithelium the irritability is reduced in general, i.e. at low as well as at high angular speeds. The increased irritability of the vestibular organ may be due to acute irritation of the internal ear caused by the acute inflammation. The detection of the above-mentioned changes can contribute to a more accurate indication of some kophosurgical operations in patients with chronic otitis and after radical operations. *(Excerpta Medica, XI)*

153. UTECH, V. H., Bessere endhörergebnisse bei der tympanoplastik durch veränderungen der operationstechnik. (Better end-hearing-results from tympanoplasty thru changing the operation technique.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 39, 1960, 367-371.

Deterioration in hearing after tympanoplasty may occur because of a collection of wax, eustachian tube dysfunctions, and recurrent inflammation in the middle ear or mastoid cavity. These complications are much rarer and the hearing level significantly better if the anatomical size of a normal middle ear cleft can be retained after tympanoplasty. The following technical modifications lead to the preservation of a normal sized cleft. In Wullsteins type four a columella effect is produced by a cartilage graft from the pinna being placed in contact with the foot plate in the oval window. A skin graft is then laid over this and made to cover the whole middle ear, thus producing a large cleft. Any ossicles or their remains can now be usefully retained. Wullsteins type three deals with an 'anatomically short' stapes or one shortened as a result of inflammatory changes. A cartilage graft lengthens such a stapes and thus allows the formation of a large cleft. The technique may be performed endaurally, produces unusually small cavities and thus greatly simplifies postoperative treatment. The hearing improvement is uniformly satisfactory with the use of this technique. *(Author's summary)*

154. VENCLÍK, H., and POTUŽNÍK, V., Význam testování citlivosti bakteriální flóry na rûzné sulfonamidy u otitid. (The importance of testing the bacterial strains on sensitivity to various sulphonamides in otitis.) *Československá Otolaryngol.*, Prague, 9, 1960, 30-32.

One hundred various strains isolated from the middle-ear in cases of otitis were tested for sensitivity to various sulphonamide preparations. Most strains of staphylococcus and of the gram-negative flora were found to be sensitive specially to Supronal. The necessity of examination of sensitivity to accessible antibiotics and various sulphonamides was emphasized. *(Authors' summary)*

155. WALANDER, A., and RUBENSOHN, G., Transitory acute unilateral perceptive deafness. *Acta oto-laryngol.*, Stockholm, 51, 1960, 485-493.

The authors report on eight cases of unilateral, subtotal, perceptive deafness in which no other symptoms are observed. The possible causes and treatment of such cases are discussed. *(R.C.B.)*

156. WAYOFF and LEOPOLD, L'otospongiose chez les jumeaux univitellins. (Oto-spongiosis in monozygotic twins.) *Ann. Oto-Laryngol.*, Paris, 77, 1960, 37-45.

The authors review 22 observations in the literature of the disease in monozygotic twins, along with their study of a pair of French twins. Findings indicate a family history of the disease in about one-half the cases; only four pairs of male twins were reported. The age of onset is around 20 years, although in seven cases it was at puberty. In most cases, the twin with the most rhinopharyngeal infections is the first affected. The influence of pregnancy is variable. In general, the twin who has the most pregnancies presents the more aggravated case, although one study reviewed reports extreme deafness in twin A with but one child, while twin B, with four pregnancies, had normal hearing. There seems to be a multiplicity of possible factors. *(R.W.A.)*

157. ZEMAN, K., and TICHÝ, S., Léčba antibiotiky a výskyt komplikací v kosti spánkové při akutním zánětu středoušním. (Treatment with antibiotics and the incidence of complications in the temporal

bone in acute otitis media.) *Československá Otolaryngol.*, Prague, 9, 1960, 75-83.

The authors present a review of mastoiditis, complicating acute otitis media, covering a period of 10 years. They paid attention to the case-history preceding the development of complications and draw attention to their causes. They also investigated the problem of the microbial flora and in view of the present extensive use of sulphonamides and antibiotics they revealed changes in the occurrence of certain types of flora. They draw attention to the possible development of latent mastoiditis when antibiotic treatment is used (masked mastoiditis). Next they analyse the treatment of mastoiditis, further complications on the temporal bone, and the therapeutic results. The following conclusions are drawn: 1. In the era of antibiotics and chemotherapeutic preparations the number of complications of acute otitis media is constantly declining. 2. If these complications develop, this is usually due to inadequate treatment. In a smaller number of instances complications were due to lack of sensitivity and to the virulence of the microorganisms. 3. The number of streptococcal and pneumococcal infections is decreasing. On the other hand there is an increased incidence of pyogenic microorganisms and their resistance to antibiotics is more frequent. 4. As a result of antibiotics latent types of mastoiditis are more frequent. 5. Treatment of mastoiditis is surgical; various surgical modifications can be used, depending on the finding upon trepanation. 6. To prevent the development of mastoiditis, the authors recommend early antibiotic treatment of otitis media, investigations of the sensitivity of the microorganism, and myringotomy and they warn against premature termination of treatment. *(Authors' summary)*

Hearing Aids

158. BECKMANN, G., Die erweiterte anpassung elekrischer hörgeräte mittels stationären hörtrainings. (Institutional training to improve the utilization of hearing aids.) *Dtsch. Med. Wschr.*, 84, 1959, 1059-1061.

If the efficient modern hearing aids are to afford optimal benefit to as many patients as possible, it is necessary that instruction and training in the use of such apparatus be given on a much larger scale than has so far been the case, in an ambulant course for the milder cases, and during a period of institutionalization for severe cases of auditory deficiency: not only must the apparatus be adapted as precisely as possible to the patient by speech audiometry, but audiopaedagogic after-treatment is also of the greatest importance, if the wearer of the hearing aid is to be satisfied. *(Excerpta Medica, XI)*

159. BENDER, R. E., and WIIG, E., Binaural hearing aids for young children. *Volta Rev.*, 62, 1960, 113-115.

The authors report a subjective series of observations concerning use of binaural aids. This is being followed by controlled experiments. In the present article they describe their use of binaural hearing aids for very young children. The child wears the aid on the head behind the ears. The authors describe how they have solved the problem of acoustic feedback and discuss use of padding with mold skin or foam rubber to help fit the aid to the child's head. Children have been able to keep the hearing aids on even though they were participating in very active play. The study covers a period of time from June 1959 to June 1960. Sixteen children with hearing losses were selected at random for brief observation periods to determine the value of wearing binaural aids. The children range in age from 13 months to 12 years and their audiograms showed an average loss for the speech frequencies ranging from 33 db to 75 db. Tests were administered to 15 of the subjects. Pure tones were presented through loud speakers in order that the subjects could wear the hearing aids for the test. Improvement in hearing with binaural amplification over no amplification ranged from 17 to 46 db with an average of 34.33 decibels. Examples are given of four cases who were tested without amplification and with binaural amplification. The latter condition resulted in greatest improvement. Profound hearing losses were not included in this initial study. Parents and teachers answered a number of questions regarding the advantages of using binaural hearing. The authors conclude that in every instance the parents expressed a decided preference for the use of binaural aids because of the better response of the children and because

of the greater convenience and economy. *(J.M.)*

160. DELK, J. H., Recruitment, *Hearing Dealer*, 10(4), 1960, 8-9.

The author describes the recruitment phenomenon and how it relates to the fitting of a hearing aid. He suggests special circuitry to overcome the tolerance problem by automatically turning the instrument off during very loud sounds and limiting sounds of lesser pressure to a predetermined level. *(D.A.H.)*

161. SHORE, I., BILGER, R. C., and HIRSH, I. J., Hearing aid evaluation: reliability of repeated measurements. *J. speech hearing Dis.*, 25, 1960, 152-170.

Fifteen clinical patients with mild or moderate hearing losses in three diagnostic categories—conductive, mixed, and sensory-neural—were subjected to a series of extensive tests. Four popular brands of hearing aids were used, each aid being tested with both a *good* and a *bad* setting of tone and other internal controls. Tests of hearing-aid performance with all hearing aids and tone settings were repeated on four different days. Three auditory measures of hearing-aid performance were used: gain or residual hearing level for speech, speech discrimination in quiet, and speech discrimination in noise. The results of all tests were analyzed statistically for each patient. Results of the analysis show that differences attributable to different hearing aids occur most often for gain (less than one-half of the subjects), less often for discrimination in quiet (less than one-third of the subjects), and not at all for discrimination in noise. Significant differences attributable to the tone setting occur for speech discrimination only for cases with sensory-neural hearing loss and only for certain hearing aids in about one-half of the two other categories of patients. Significant differences attributable to the day of testing are found for gain in less than one-half of the subjects but do not occur at all for speech discrimination in quiet. These differences due to testing day constitute the only significant differences found for discrimination in noise and then only for one subject in each of the three diagnostic categories. This study was concerned with the reliability of three measures obtained in speech audiometry. It is concluded that the reliability of these measures is not good enough to warrant the investment of a large amount of clinical time with them in selecting hearing aids. Since the study was based upon the hearing aids used in ears whose hearing losses ranged from 37 to 58 db, it should be pointed out that extrapolation of such conclusions to cases with severe losses cannot be made without further study. Furthermore, this conclusion does not imply that there are no differences among conventional monaural hearing aids; but rather it suggests that whatever differences there might be are not detectable by these three usual measures of speech audiometry. *(Authors' summary)*

Language and Communication

162. BERKHOUT, P. R., Onderwijs en opvoeding van het dove kind. (Education and rearing of the deaf child.) *T. Gebrekkigenzorg*, Amsterdam, 4, 1958, 151-156.

In congenitally deaf children, language instruction constitutes the basis for all subsequent development of intelligence and mind. The speech method is preferred to the sign-language method for social reasons. The deaf child 'hears' only the visible part of our sounds, i.e., the lip movements, and when speaking itself it 'hears' of its own speech only what it can feel in its own organs of speech. In addition to this visual language, which represents the 'mother tongue' to these children, a system of functioning speech-language symbols must be developed. The speaking ability of the child, its so-called 'articulation,' must grow with and through language development. Mastery of language is the primary fact, and speech is of importance only as an aspect of this primary phenomenon. Without such language instruction, this building of a means for active contact with others, education of a deaf child can never be satisfactory. *(Excerpta Medica, XIX)*

163. BOSKIS, R. M., Printsipy spetsial'nogo obuchenia iazyku slaboslyshaschikh detei. (Principles of special teaching of language to severely hard-of-hearing children.) *Akad. Pedagog. Nauk.*, Moscow, 2, 1959, 27-38.

Children with small remnants of hearing in the speech range present a qualitatively different educational problem than do the

deaf. For this reason, severely hard-of-hearing and deaf children are taught in separate schools in the Soviet Union; their criteria for 'severely hard-of-hearing' is a loss of a hearing level of 70 db or more in the speech range. According to the author, if severely hard-of-hearing children enter the first grade without speech, they are still able to *imitate* speech with the help of hearing aids, even if it is only an approximate imitation. With auditory training and sensory training, these children can acquire an oral foundation on which to build language. This foundation is reinforced by the cultivation of a more exact awareness of word-sound composition and non-accented syllables. Sound-awareness is instilled by special corrective work, reading, writing, as well as by an accumulated vocabulary. Direct experience in activities and extensive use of visual aids is said to enrich the active vocabulary of these children. An enlarged, more exactly visualized vocabulary widens contextual possibilities for more effective auditory discrimination, speechreading, mastery of grammatic structure, reading, and oral communication. Language assumes a functional character in oral communication as used for the satisfaction of the child's interests and needs. A further incentive which motivates the hearing-impaired child to improve his language is direct person-to-person relationships. *(B.V.M.)*

164. BOWER, D., Comics—a meaningful teaching experience in the language arts. *Amer. Ann. Deaf*, 105, 1960, 230-231.

Comics provide another avenue to teach better reading and language to deaf children. However, teachers must not underestimate the complexity of language structure and vocabulary in comic strips and comic books. Nevertheless, some comics have little or no discourse and lend themselves to the development of the idea or story conveyed by the pictures. Comics afford a first hand opportunity to the teacher of observing the child's appreciation of humor. They may be integrated with subject matter and help the child to learn faster, reason better, and remember longer. Artistically endowed teachers can create their own comic strips in such a way so as to evoke and develop verbal expression of ideas in the child. *(C.P.G.)*

165. FALCONER, G. A., Teaching machines for the deaf. *Volta Rev.*, 62, 1960, 59-62, 76.

At the present time there is a surge of interest among theoretical and experimental psychologists in the possibilities of teaching machines. This renewal of interest has been a result of B. F. Skinner's efforts to apply knowledge gained in the laboratory through an experimental analysis of events which influence learning. This involves analyzing the effects of reinforcement by varying the types of consequences resulting from some given behavior. It was noted that the probability of the behavior changes. Through these studies Skinner developed a machine for teaching arithmetic. The author proposes that teaching machines hold promising possibilities for the deaf as a means of increasing teaching efficiency by relieving the teacher of some of the tedium of drill and by engaging pupils in self-oriented activities at times when the teacher is occupied with other pupils of the class. Properly used, an appropriate machine can be a more effective teacher than a human being for certain kinds of work. A break-through of the language barrier is a reasonable hope. Deaf children might benefit emotionally as well as educationally because of the increased opportunity to work independently. An electrically enervated, stimulus-response, multiple-choice, immediate reinforcement device was designed, constructed, and tested to explore the possibilities of using a machine to teach word recognition to young deaf children. Eight subjects learned 13.75 nouns in about 50 minutes, spending only five minutes a day at the machine for ten consecutive school days. Retention after two weeks was nearly perfect. Further work is being done to develop programs for teaching vocabulary other than nouns and to explore the limits of teaching language concepts by the multiple-choice technique employed with the experimental teaching machine. It is suggested that Skinner's techniques should be investigated for use with older deaf children who can read. *(J.M.)*

166. LIVINGSTON, P., Question forms. *Amer. Ann. Deaf*, 105, 1960, 240-248.

In attempting to work out a scheme by which the pupils might develop questions

with greater ease and more independence, the author went through Book I of *Language Stories and Drills* and classified all the question forms given. She then went through the pages which gave the answers and classified the questions which would be written for those answers. She found that the questions fell into four definite patterns with a few miscellaneous ones which also fell into these patterns but with minor changes. *(C.P.G.)*

167. LORENE, SISTER JAMES, Pronouns puzzle primary pupils. *Volta Rev.*, 62, 1960, 17-19, 46.

This article reports the ways in which pronouns are found to be used in a variety of primers and first grade readers. Instructions are then given as to how interesting sentence drills may be used to develop the use of the pronouns. Finally, suggestions are given demonstrating the known usages in little stories. *(J.M.)*

168. MOSER, H. M., O'NEILL, J. J., OYER, H. J., WOLFE, S. M., ABERNATHY, E. A., and SCHOWE, B. M., Jr., Historical aspects of manual communication. *J. speech hearing Dis.*, 25, 1960, 145-151.

Manual signals as a means of communication are of ancient and uncertain origin. Hand alphabets have been in existence for more than a thousand years. The use of the manual alphabet in the formal education of the deaf is of more recent origin and was probably adapted from the practice of religious orders in observing vows of silence. A number of modifications which led to the establishment of the present one- and two-hand methods are described. *(Authors' summary)*

169. PLANT, G. R. G., Plant-Mandy voice trainer. *Teach. Deaf.*, Birmingham, 58, 1960, 12-15.

The design of an instrument to provide voice training in pitch and volume control for profoundly deaf children is described. Wearing a throat microphone the child learns to monitor his voice as he watches a light beam on a screen. The beam moves up and down as he raises and lowers his voice. A steady beam appears when the volume of voice is adequate. The instrument is recommended for use with children as young as six years of age. *(M.S.K.)*

170. ROWE, F. B., BROOKS, S., and WATSON, B., Communication through gestures. *Amer. Ann. Deaf*, 105, 1960, 232-236.

The understanding of gesture language is purported to be universal by some writers. Their evidence, however, is largely anecdotal. A pilot study of female college students comparing ability to match meaningful words and nonsense syllables to gesture pictures indicated that success with words exceeded chance expectancy. To further examine communication through gesture language a test was devised which consisted of 30 pictures, selected from Tomkin's American Indian sign language gestures. The pictures ranged in difficulty from very clear to unclear as rated by a panel of judges. The task involved matching the 30 gesture pictures to words explaining their meaning. In all there were 33 words arranged in alphabetical order. The additional three words were included to make the test more complex. The test was administered to about 500 subjects of both sexes. The sample consisted of white college and high school students, deaf college and high school students, and Negro students. The results indicated that for all groups the ability to match correctly the words with the picture gestures was significantly higher than chance. There were no sex differences. Mean scores of white high school students were significantly higher than those of Negro students. The mean score of deaf high school students exceeded significantly the mean of normal students. Deaf college students obtained significantly better scores than normal women college students, but not normal male college students. College students were superior to high school students. A correlation between intelligence and gesture test scores was nonsignificant for college students, but significant for a group of high school students with a more representative range of intelligence (r-.36). *(C.P.G.)*

171. SCOUTEN, E. L., Helping your deaf child to master English through finger spelling. *Amer. Ann. Deaf*, 105, 1960, 226-229.

The difficulty encountered by the young

deaf child in written English reflects his paucity of language development. Lipreading *per se*, whether in or out of school, does not constitute effective drill for him in language usage and, consequently, development. The late Mrs. Alexander Graham Bell maintained that a primary prerequisite for successful lipreading is an intimate knowledge of English, especially in the vernacular. In addition, it is well known that good lipreaders do not catch every word of a sentence, but synthesize keywords for understanding. The young deaf child, however, does not have the language mastery to synthesize key-words from the lips, and is, therefore, continually reinforcing broken language patterns. These patterns are carried over into his written English and constitute the basis for his 'deaf language.' To solve this perplexing problem the use of the manual alphabet, i.e., finger spelling, is advocated in conjunction with lipreading as a method to develop language in the young deaf child. Objections of parents who might regard the use of finger spelling as a deterrent to the child's speech progress are answered by quotations from the publications of Alexander Graham Bell in support of the method. *(C.P.G.)*

Multiple Handicaps

172. COSTELLO, P., Where does Mike belong? *Volta Rev.*, 62, 1960, 66-67, 91.

This article first discusses the child who has been diagnosed as having cerebral palsy and deafness and some of his problems. Second it describes the Crotched Mountain School for the Deaf and the Crotched Mountain Rehabilitation Center and their program for deaf, brain injured, cerebral palsied children. Third, the article lists a number of schools which enroll children and which provide preschool or elementary classes for children who have multiple handicap problems. *(J.M.)*

Psycho-Educational Factors

173. EISDORFER, C., Rorschach rigidity and sensory decrement in a senescent population. *J. Gerontol.*, 15(2), 1960, 188-190.

Forty-eight persons over 60 years old were tested for visual acuity, auditory acuity, mental ability (WAIS) and psychological rigidity (Rorschach). Results suggest that unlike loss of visual acuity, perceived by the person himself, loss of auditory acuity (21+ db loss, 256-2048 cps) may be recognized more by others, then relayed to the person who withdraws, becoming more rigid in personality. *(J.C.S.)*

174. MATZKER, V. J., Schizophrenie und taubheit. (Schizophrenia and deafness.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 39, 1960, 85-91.

The present incidence of deafness in the Federal German Republic is 0.431 per thousand according to the 1950 census and can hardly be expected to exceed 0.5 per thousand. Among 3631 schizophrenics 16 were found to be deaf, corresponding to 4.4 per thousand. Even allowing for various sources of error this demonstrates a significantly high incidence of deafness in schizophrenics. The rate in 609 cyclothymes was 1.6 per thousand; this figure is still within the limits of incidence of deafness for the rest of the population and shows no significant rise or fall. As yet there is no reliable information concerning the form and extent of acoustic hallucinations in deaf schizophrenics. *(Author's summary)*

175. NAFFIN, P., Die psychologischen voraussetzungen der erziehung des taubstummen kindes. (Psychological bases of the education of deaf children.), Chapter 19 from H. Hetzer (editor), *Pädagogische Psychologie* (Educational Psychology), Göttingen, Germany, 1959.

This chapter presents a tentative outline for a psychology of the deaf child. It starts with a discussion of relevant definitions, in which the term 'taubstumm' (deaf-mute) is defended as significant and appropriate rather than the less specific 'gehörlos' (non-hearing). The author states as his general opinion that the deaf person is bound to develop differently and consequently possess a specific personality structure different from a hearing person. Naffin stresses the psychological effects of the deaf child's difficulty in acquiring ordinary language. In accord with C. Schuy, Naffin believes that every deaf child spontaneously must create a kind of language by the only means available to him, i.e., by gestures, in order to 'make the world available to his

mind and communicable to others through symbols.' Recognizing the limitations of a spontaneous and the traditional language of gestures, Naffin touches on the history of oralism, from Heinicke's 'Deutsche Methode' and Decroly's 'méthode globale' to several combined methods. He considers it psychologically sound to support the arduous oral language education of the deaf child through a sensible and esthetic auxiliary visible system as long as oral speech is given the primary rank it deserves. Nevertheless, Naffin again agrees with Schuy that the mother tongue remains essentially a foreign language for the deaf person, 'a tool, he uses, as long as he has need to. In conversation with other deaf people, he will always and without exception use the language of signs, because it alone becomes to him a genuine means of expression.' Naffin then proceeds to summarize some of the research findings with regard to various primary areas such as perception, fantasy, affect, social behavior, and thinking. Among the more significant findings in comparison with hearing children are a certain limited visual superiority of deaf children, a restricted fantasy life, an inclination towards expressing the more naive and uncontrolled affects, a curiosity and thirst for sensation, and a trend towards understanding ordinary language in terms of specific and concrete meanings, rather than in its abstract and relational aspects. Finally, the author discusses aural training and the place of rhythmical and musical education in the modern education of the deaf. He advocates for his German readers a more vigorous use of these auxiliary means which build on residual hearing and the sense of vibration. Such means are said to bring the deaf child closer to the vital learning of his cultural language and to the experiences of hearing people. The chapter finishes with a short note on the education of the deaf-blind child and a list of 159 references, drawn predominantly from German sources. *(H. G. Furth, Catholic U.)*

176. REYNIER, J. P., Le rôle des tests psycho-pédagogiques dans la classification des surdi-mutités. (The role of psychopedagogical tests in the classification of deaf-mutes.) *Ann. Oto-Laryngol.*, Paris, 76, 1959, 1044-50.

This study tests the hypothesis that the congenitally deaf are more difficult to educate and encounter more obstacles in their professional activities than subjects with acquired deafness. In collaboration with Mme. Dupont-Huber, the following aptitudes of 126 subjects were tested: verbal, nonverbal, numerical, perceptual, mnemonic, and drawing. Results do not confirm the hypothesis tested, as those with acquired deafness surpassed the congenitally deaf only on tests of memory, and certain tests of perception. On all the other tests, the congenitally deaf gave better responses. The author theorizes that acquired deafness is often a sequela of brain infections that may affect higher nerve centers, while damage in congenital deafness is more restricted to the auditory mechanism. He also feels that such tests can aid in diagnosing the etiology of deafness. Girls were superior to boys on most tests, especially verbal and numerical; boys were better on reasoning tests. *(R.W.A.)*

177. ROSENSTEIN, J., Cognitive abilities of deaf children. *J. speech hearing Res.*, 3, 1960, 108-119.

The cognitive ability of 60 deaf and of 60 hearing children was examined with a test battery of a perceptual discrimination task, a modified Wisconsin Card Sorting Task, and a concept attainment and usage task, all presented visually and nonverbally. Results indicate that there is no statistically significant difference between deaf and hearing children in their ability to perceive, abstract, or generalize, nor are differences observed when these groups are compared with respect to age (8 years, 12 years); or with respect to type of school (parochial, public, private). The results are consistent with the hypothesis that no differences will be observed between deaf and hearing children in the tasks used here, where the language involved in these tasks is within the capacity of the deaf children. In those previous findings where conceptual deficit has been reported, it seems likely that the tasks have involved linguistic abilities beyond those of the deaf children tested. *(Author's summary)*

Social and Legal Factors

178. THUME, S., Sozialhilfe auch für schwerhörige kinder. Ein beitrag zur lö-

sung dieses problems in der Bundesrepublik Deutschland. (Social aid for deaf children in the Federal German Republic.) Z. *Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 561-575.

On the basis of an incidence of 0.02% of a population of 50 million, it is estimated that 10,000 children of school age may be developmentally retarded because of deafness, in the Federal German Republic. A plea is made for special social, medical, and educational facilities for this large number of deaf children, and a program of the requisite social services within an educational framework is outlined. *(Excerpta Medica, XI)*

179. WILLIAMS, B. R., Third congress of the world federation of the deaf. *Silent Worker*, 12(5), 1960, 3-5.

One of the two American delegates to the Third Congress of the World Federation of the Deaf, the author relates events of the convention at Weisbaden, West Germany, August 20-26, 1959. This organization was founded in 1951 at Rome, Italy, and now has members in about 35 countries. The United States is a participating country through the National Association of the Deaf. Attendance at the main session was placed at 2300, including interpreters and recorders. The Congress has achieved consultancy B status to UNESCO, which places it in an international advisory capacity on information about the deaf. Seven study commissions have been set up, viz: medicine, psychology, education, vocational rehabilitation, art, and mimicry (language of signs). The latter commission is presently engaged in developing an international language of signs. Insight is given into the work of the commission on vocational rehabilitation, of which the author is a member. The article indicates that the WFD is a very worthwhile organization working on world-wide problems of the deaf, and that too few Americans are participating. *(M.D.G.)*

VOCATIONAL ADJUSTMENT

180. DEREX, P., La formation professionnelle à l'Institut Départemental des Sourds-Muets d'Asnières. (Occupational training in the Departmental Institute for Deaf-Mutes of Asnières.) *Réadaptation*, 59, 1959. 41-42.

This institute, which has a capacity of 470, accommodates deaf-mute, deaf, and semi-deaf children of both sexes from the age of four, for language instruction, general education, and occupational training. Only children whose mental and physical condition makes education or re-education possible are admitted. At present all children are living in the institute, but in time it may also take pupils with meals but no beds, and completely external pupils as well. The institute includes a co-educational kindergarten, and separate elementary schools and schools for occupational and household training. The occupational training lasts four years and a certificate of occupational skill is given on completion. The institute also helps to find jobs for its pupils under the law for rehabilitation of handicapped workers. *(Excerpta Medica, XIX)*

181. RYAN, C. W., Where are the deaf in industry? *Silent Worker*, 12(6), 1960, 7-8.

The lack of understanding of the qualifications of the deaf in employment among personnel managers is reflected in this Master's degree research thesis at the University of Chicago. The survey was confined to the East Bay area of California, conducted during August and September of 1959, and elicited responses from 177 out of 266 industrial firms queried. It is estimated that these firms represent a minimum work force of 38,950, of which only 75 are deaf employees. Prevalent throughout the replies to the survey was evidence of a considerable lack of information about the deaf as distinguished from the hard-of-hearing. It was also indicated that very little was known about the deaf in regard to industrial safety. The questionnaire revealed that more than half the respondents felt deaf employees are accident-prone. On the other hand, personnel managers showed generally favorable attitudes toward the deaf as regards motivation, stability, and personality. The author suggests that the answer to the safety bias lies in more information to industrial employers about the safety record of the deaf, which job could be undertaken by the National Association of the Deaf, the Office of Vocational Rehabilitation and other interested agencies. *(M.D.G.)*

SPEECH

Acoustics

182. CÁRDENAS, D. N., Acoustic vowel loops of two Spanish idiolects. *Phonetica*, Basel, 5, 1960, 9-34.

Although this pilot project was undertaken with the hope that more extensive research along these lines on Spanish vowels would follow, we can posit some tentative conclusions from our findings, which later may be substantiated or refuted. (1) We have determined the acoustic qualities of Spanish vowels for two different idiolects and the vowel loops determine the wide range of allophonic variations for a given phoneme when occurring in the normal spoken chain. (2) Assuming that we have interpreted correctly the relation of the frequencies of formant 1 and 2 with articulatory movements and positions as determined by the traditional and physiological triangles, we must conclude that the rules given by Navarro Tomás, concerning the fact that Spanish vowels are more open under certain conditions, are not valid, at least for these two Spanish idiolects. (3) Due to the allophonic variations of some vowels in identical phonetic environments, the assertion that, within certain limits, there is no compensatory relationship between formants 1 and 2 which allows the ear to interpret certain sounds as having the same phonemic equivalence, if not phonetic, is open to question. (4) The acoustic vowel triangle gives the acoustic qualities for each vowel and the arrangement as we would sense the vowels kinesthetically, therefore having a striking similarity to the traditional vowel triangle. The acoustic vowel triangle cannot accurately represent the actual physiological position of the tongue for the vowels. For the accurate physiological articulation of vowels one must depend on X-ray analysis. *(Author's summary)*

183. HOUSE, A. S., Formant band widths and vowel preference. *J. speech hearing Res.*, 3, 1960, 3-8.

Five vowels were used to investigate the subjective importance of half-power band widths of vowel formants. It was found that (a) the formants in 'natural' speech are narrow rather than wide, (b) from vowel to vowel there are variations in the most-preferred formant band widths; these variations correlate positively with known characteristics of vowel articulation, and (c) these preferences are learned. *(J.F.J.)*

184. LIEBERMAN, P., Some acoustic correlates of word stress in American English. *J. acoust. Soc. Amer.*, 32, 1960, 451-454.

The relationships between changes in fundamental frequency, envelope amplitude, and duration and mechanical recognition of stressed syllables were investigated using English noun-verb pairs recorded by sixteen native speakers. A 'simple binary automatic stress recognition program' was devised, from which the judgments agreed with perceived patterns almost completely. *(B.A.L.)*

185. PICKETT, J. M., and DECKER, L. R., Time factors in perception of a double consonant. *Lang. Speech*, London, 3, 1960, 11-17.

The paper describes a listening experiment that was carried out to examine the perceptual distinction between a single stop consonant /p/, and its double counterpart, /p-p/. The test sentence, *He was the topic of the year*, was recorded on tape; then, in a number of recorded copies, the duration of the /p/ closure was altered by inserting or removing tape. A group of listeners judged each of the altered sentences to be either *He was the topic of the year* or *He was the top pick of the year*. Effects of ten closure durations (60, 100, 150, 200, 250, 300, 350, 400, 500, and 585 msec.) were studied in various combinations with five rates of utterance (2, 3, 4, 6, and 8 syllables per second). A threshold closure duration is defined to be the duration at which 60% of the judgments were *topic*. As the rate increased from 2 to 8 syllables per second, the threshold closure duration decreased from 320 to 140 msec. at a progressively declining rate. *(G.P.)*

186. SAKAI, T., and INOUE, S-I., New instruments and methods for speech analysis. *J. acoust. Soc. Amer.*, 32, 1960, 441-450.

The authors present three devices of their own design for displaying and analyzing the zero-crossing waves of a speech signal. Included in the paper are a discussion of the importance of the zero-crossing wave,

details of the devices, and sample data obtained therefrom. *(B.A.L.)*

187. STEVENS, K. N., Toward a model for speech recognition. *J. acoust. Soc. Amer.*, 32, 1960, 47-55.

The author presents an approach to the design of a machine for the recognition and synthesis of speech. As proposed, the machine is to transform a speech wave into phonetic symbols, and vice versa. Some of the acoustical problems involved are presented and discussed, and a preliminary experiment is reported. *(B.A.L.)*

188. STREVENS, P., Spectra of fricative noise in human speech. *Lang. Speech*, London, 3, 1960, 32-49.

The paper describes the results of a spectrographic analysis of a number of voiceless fricatives. It is shown that the sounds can be described in terms of the frequencies of the lower and upper limits of energy present, the presence or absence of formant-like concentrations of energy, and the over-all relative intensity of the sounds. The sounds investigated fall into three groups: front, mid, and back, corresponding to the regions of the vocal tract within which they are produced. Sounds in the front group have a long spectrum, with little patterning of peaks of energy; their relative intensity is low. Sounds in the mid group have a short spectrum, with the main region of energy at a higher frequency than in the other groups; their relative intensity is high. Sounds in the back group have a spectrum of medium length, exhibiting a formant-like patterning of energy; their relative intensity is intermediate between the other groups. Tentative criteria are offered for distinguishing between members of each group. Combining this evidence with general phonetic knowledge, the author makes a number of statements about other categories of sounds which include a component of fricative noise, such as voiced fricatives, stops, and affricates. *(G.P.)*

189. ZUBERBIER, VON E., and GRÜNEWALD, G., Studien zur psychomotorik der sprechintensität. (Studies of the psychomotorics of speech intensity.) *Phonetica*, Basel, 5-1960, 99-115.

A summary report is given in this study on several systematic experiments concerning the psychomotorics of speech intensity. After the registration of speech intensity by means of the gauge-writer and the evaluation of the gauge-curve (speech intensity as a function of time) have been discussed, from a series of experiments the characteristics of the gauge-curve are shown to be influenced by psychic factors. Mainly statistically significant relations of speech intensity—resp. the activity of speech movements—with the level of psychic activity could be established. In discussing this attachment of psychological phenomena to phonetic ones the results of simultaneous registrations of handwriting are taken into account. Other experiments yield relationships between speech intensity and the coordination of speech movements. Experiments with voluntary variations of the manner of speaking reveal relations of the characteristics of the gauge-curve with such aspects of speech as speed and articulatory tension. *(Authors' summary)*

Anatomy and Physiology

190. BJUGGREN, G., Device for laryngeal phase-determinable flash photography. *Folia phoniat.*, Basel, 12, 1960, 36-41.

A photo-laryngoscope is described in which the light source consists of a specially designed electron flash bulb, a stroboscope. The stroboscope can be synchronized with a throat microphone. The photo-laryngoscope can be handled like an ordinary laryngeal mirror and can be used without difficulty on the majority of patients with voice disorders. *(J.B.R.)*

191. HELLER, S. S., HICKS, W. R., and ROOT, W. S., Lung volumes of singers. *J. appl. Physiol.*, 15, 1960, 21-40.

It is generally recognized that precise regulation of respiration is an important factor in singing. It would seem possible that the constant use of the diaphragm and skeletal muscles involved in expiration would result in hypertrophy and that such changes might alter the volumes of the various divisions of lung air. To test this idea the authors measured the lung volumes and capacities in normal men and women and in subjects who had training as professional singers. Lung volume determina-

tions were made on 21 subjects with no professional vocal training and on 16 professional singers. The tidal volume, inspiratory capacity, inspiratory reserve volume, expiratory reserve volume, and vital capacity were measured directly, using a Benedict-Roth spirometer. In every parameter tested no significant difference was found between the mean values obtained from the normal control group as compared with the mean values found for singers. Most of the lung volume determinations were measured in both recumbent and standing positions. Apparently, the choice of position has no particular effect on possible differences between singers and nonsingers. It is concluded that in terms of the various divisions of lung volume no significant differences exist between professional singers and subjects who have had no professional vocal training. It may be that other respiratory tests designed to test the neural control of respiration would reveal differences between individuals of the two groups. *(M.N.)*

192. WADA, J., and RASMUSSEN, T., Intracarotid injection of sodium amytal for the lateralization of cerebral speech dominance. *J. Neurosurg.*, 17, 1960, 266-282.

Accurate knowledge of the lateralization of speech function is of urgent importance to the neurological surgeon in consideration of surgical procedures for lesions above the tentorium. The carotid amytal test is demonstrated as a means of pre-operative proof of the lateralization of the speech functions. A technique is described for the intracarotid injection of 10 per cent Sodium Amytal to produce temporary inactivation of function of the hemisphere with the aim of providing proof of the lateralization of speech function when this is in doubt. Experiments with monkeys and human patients have been reported which verify the success of this test method. The test is advocated as a preliminary to operations in the vicinity of the Sylvian area in left-handed and ambidextrous patients, and in right-handed patients in whom any doubt exists as to which cerebral hemisphere is dominant for speech. *(D.A.O.)*

193. ZENKER, V. W., ZENKER, A., Über die regelung der stimmlippenspannung durch von auBen eingreifende mechanismen. (Concerning the action of extrinsic mechanisms and vocal fold tension). *Folia phoniat.*, Basel, 12, 1960, 1-36.

A study of the factors which control the tension of the vocal folds is made by electromyographic, x-ray, and anatomical methods. The activity of all muscles of the larynx is greatly influenced by respiration, posture, and the position of the jaw and tongue. In lengthening the vocal folds the crico-thyroid, the elastic ligamentum-conicum, and the thyro-pharyngeal are important. The functional chain–the arytenoid-epiglottis to the hyoid-mandible and to the inferior fibers of the genioglossus-mandible–plays a part in the regulation of the length of the vocal folds. The theory of the "tilt-back effect" of the sterno-thyroid is highly improbable as is any theory based on the premise that the thyroid cartilage can be moved forward or tilted back by the action of various extrinsic laryngeal muscles. *(J.B.R.)*

Intelligibility

194. CALEARO, C., PESTALOZZA, G., and TEATINI, G. P., La comprensione della voce parlata in presenza di differenti condizioni di rumore. (The understanding of speech in different noise-conditions.) *Arch. Ital. Otol. Rinol., Laringol.*, Milan, 70, 1959, 570-580.

In this research the authors of the article studied the understanding of speech (short sentences of 5 words) in the presence of different noise conditions (global thermal noise and thermal noise with band-passing filters). It was observed that the low-pass filters cause a more pronounced masking effect than the high-pass filters. The use of ear-protectors ameliorates the perception of speech in the presence of noise with high-pass filters (decrease of the S/R relationship) and impairs the perception in the presence of noise with low-pass filters (increase in the S/R relationship). *(Excerpta Medica, XI).*

195. HARRIS, J. D., HAINES, H. L., and MYERS, C. K., The importance of hearing at 3 KC for understanding of speeded speech. *Laryngoscope*, 70, 1960, 131-146.

Sentence material spoken at a faster than normal rate was presented to: (1) normal

listeners, (2) patients with essentially normal hearing for frequencies up to and including 3000 cps but with hearing levels of 20 to 85 db at 4000 cps, and (3) patients with essentially normal hearing through 2000 cps but with hearing levels of 20 to 65 db at 3000 cps. The first two groups scored an average of 82.4% and 84.5% correct respectively on a scale of intelligibility. The patients with hearing impairments at 3000 cps averaged 69.4% significantly lower than the other two groups. The authors conclude that while frequencies above 2000 cps may not contribute significantly to intelligibility of undistorted speech in laboratory listening conditions, they may be important for discrimination of distorted speech in ordinary listening situations. *(R.G.)*

196. KRETSINGER, E. A., and YOUNG, N. B., The use of fast limiting to improve the intelligibility of speech in noise. *Speech Monogr.*, 27, 1960, 63-69.

The hypothesis that fast limiting is superior to clipping as a technique for improving the intelligibility of speech in the presence of noise is examined. Moderate (10 db) and deep (20 db) compression of the tape recordings used in the study are employed. Significantly higher intelligibility scores are obtained for fast limiting for both moderate and deep compression. Suggested areas for further investigation are the relationships between amounts of compression and various signal-to-noise ratios, and the optimum operational parameters of fast limiting. *(J.B.R.)*

197. OYER, H. J., MOSER, H. M., and WOLFE, S. M., Relationship of phonetic structure to the intelligibility of words simultaneously recorded at ear and lips. *J. speech hearing Res.*, 3, 1960, 44-51.

A comparative analysis was made of phonetic elements of listener response to recorded speech signals of ear and lip origin for five S/N ratios. Listeners tended to restrict substitute responses to words within the list. Fewer substitutions of words outside the original list occurred as noise was increased. Certain vowels and diphthongs appeared to be related to intelligibility patterns, but there was no apparent relationship between consonant structure and intelligibility. *(J.F.J.)*

198. POLLACK, I., and DECKER, L., Consonant confusions and the constant ratio rule. *Lang. Speech*, London, 3, 1960, 1-6.

The paper describes an examination of the constant-ratio rule of Clarke, as applied to the reception of speech sounds in noise. The speech sounds studied were initial English consonants [f, h, l, r, w, y], the cluster [hw] and the absence of an initial consonant, [#]. Each sound, paired with the vowel [a], was read in a carrier phrase, and presented in noise to a listening crew of five university students. Four speech-to-noise (S/N) ratios were employed: −17, −13, −9, and −5 db. The average deviation between observed consonant confusions for three sets of 4 x 4 matrices and confusions predicted on the basis of the constant-ratio rule from the 8 x 8 matrix averaged about four per cent over a wide range of S/N ratios. The authors interpret the results in support of the constant-ratio rule. On the basis of inter-confusion analysis, the authors suggest the following tentative representational structure for the selected consonants: [l, r, w, y] over a wide range of S/N ratios; [f, h, #] at the most unfavorable S/N ratios; and a marked asymmetric confusion between [w, hw]. *(G.P.)*

199. SOLOMON, L. N., WEBSTER, J. C., and CURTIS, J. F., A factorial study of speech perception. *J. speech hearing Res.*, 3, 1960, 101-107.

Speech and tonal tests were administered to 90 male Navy recruits. Included were verbal facility tests and intelligibility tests of distorted speech, noise-masked speech, filtered speech, speech at threshold, speech in the presence of distracting sounds. Included also were pure-tone audiometer tests and the Seashore Tests of Musical Talent. Pearson *r*'s were computed for all possible pairs of tests. The resulting intercorrelation matrix was factor analyzed by the complete centroid method and rotated to orthogonal simple structure by the Varimax method. Important among the eight factors extracted were: resistance to distortion, resistance to distraction, acuity, individual audiometry, 4000-cps hearing loss, and verbal-facility-Seashore. Of the 39 tests in this study, 28 had been used in a previous factorial study of college students. Results agree reasonably well; differences can be explained by differences between popula-

tions and analysis methods (oblique vs. orthogonal factor rotations). *(Authors' summary)*

PHONETICS

200. GERHARDT, V. D., Auszug aus "Zu den epochen der deutschen mandartenforschung." (Abstracts on an epoch of German dialect research.) *Phonetica*, Basel, 5, 1960, 4-8.

Ninety years after Rudolf von Raumer, the author in 1947 once again called attention to the importance and urgency of making records from dialect speakers, of paying regard not to "pure dialects" only but also to the variety of mixtures of dialects and literary language, and of beginning with an adequate description of the new type of linguistic sources instead of restricting the investigations to sources of written speech or to theorizing. *(Author's summary)*

201. KOLMAR-KULLESCHITZ, VON F., Ist das phonem ein zeichen? [Stratifizierung der bedeutung]. (Is the phoneme a symbol? [Stratification of meaning].) *Phonetica*, Basel, 5, 1960, 65-74.

It is the conception of several renowned linguists that phonemes do not possess meaning (Bloomfield, Hjelmslev), or at least no 'Eigenbedeutung' (meaning of their own–Koschmieder). Jakobson also seems to share this kind of view discussing, however, what he calls the 'semantic load' of phonemes. It is only by means of the phonemes being commuted within a morpheme that their semantic load comes forward as 'otherness.' The author suggests another viewpoint. There are relations analogous to those existing between phonemes and morphemes both between morphemes and words and between words and other syntagmatic units. All units of language effect an alteration of meaning of the respectively higher formations. On the other hand, even the morpheme has meanings more complicated than mere otherness (= de Saussure's 'diversity'), so that it seems suitable to suppose a stratified construction of meaning. 'Otherness' (diversity) would then be taken as the first–or second–fundamental stratum of meaning. While the phoneme shows forth this stratum alone, at units of higher levels further strata of meaning are built over that of 'diversity.' Thus a carrier-skeleton of meanings would appear exhibiting the interdependencies among the various strata of meaning, i.e., the structure of meaning. *(Author's summary)*

202. LADO, R., Linguistic interpretation of speech problems of foreign students. *Quart. J. Speech*, 46, 1960, 171-175.

The usefulness of a knowledge of linguistic information in correcting the speech errors of foreign students learning English is discussed and illustrated. Major attention is given to phonemic, morphophonemic, and syntactic problems of persons learning English as a foreign language. Two conclusions of the author are (1) that the teaching of English to foreign students should not normally be labeled 'speech correction' as the linguistic problems of such students are not abnormalities and (2) classes for the purpose of teaching English as a second language should not be called 'remedial.' *(H.L.L.)*

203. WODARZ, VON H.-W., Über vergleichende satzmelodische untersuchungen. (Comparative investigations of sentence-melody.) *Phonetica*, Basel, 5, 1960, 75-98.

Little work has as yet been done in the sphere of comparative investigations of sentence-melody (intonation). This paper deals with an outline of a method of investigation which might, perhaps, serve as a basis on which comparative studies might be developed. According to several questions in connection with the outline, the following main subjects are discussed: (1) function of intonation, (2) differences both in inventory and position between systems of intonation, (3) structure of intonation. The interpretation of these problems is illustrated by pertinent examples. *(Author's summary)*

SEMANTICS

204. LURIA, A. R., and VINOGRADOVA, O. S., An objective investigation of the dynamics of semantic systems. *Brit. J. Psychol.*, London, 50, 1959, 89-105.

Normal children, retarded children, and normal adults were compared in their reactions to words read to them. Changes in the size of blood-vessels in the finger and

head were recorded. 'Signal words' accompanied by pressing a button evoked a motor and vascular reaction, whereas 'neutral words' evoked neither. Words similar in meaning evoked a contraction of the blood-vessels, even in the absence of a motor reaction, words similar in sound did not. In the retarded children, however, vascular reactions were evoked to words similar in sound as well as in meaning. Also, the specificity of motor response disappeared in retarded subjects who would press a button to words similar in sound to 'signal words.' Electric shock was used for reinforcement with the adult subjects. Results indicated a specific pain reaction to a 'signal word' and words closely related to it semantically, a non-specific orienting reaction to less closely related words, and no reaction to 'neutral words.' Reinforcement by pain on one or two words would restore the whole active system of words, which had been extinguished by many repetitions. Verbal reports of subjects indicate that word systems are not fully conscious, and are reflected more fully in vascular reactions than in conscious reports. *(R.W.A.)*

SPEECH AND LANGUAGE DEVELOPMENT

205. CARSON, A. S., and RABIN, A. J., Verbal comprehension and communication in negro and white children. *J. educ. Psychol.*, 51, 1960, 47-51.

The author attempted to determine whether or not there were differences among northern Negroes, southern Negroes, and white children with reference to verbal comprehension and communication ability. The N for each of the three groups was 30. Groups were matched for age, sex, and grade placement. Results indicate that the white children in this study were superior to the Negro children in verbal comprehension and communication. It was shown also that the northern Negro children were superior to the southern Negroes. The two tests employed were the WISC vocabulary and the Full-Range Picture Vocabulary Test by Ammons and Ammons. *(H.J.O.)*

206. DARLEY, F. L., and MOLL, K. L., Reliability of language measures and size of language sample. *J. speech hearing Res.*, 3, 1960, 166-173.

Speech samples collected from 150 five-year-old kindergarten children were used to evaluate the reliabilities of two language measures, mean length of response (MLR) and structural complexity score (SCS) in relation to the size of the language sample. Each sample was divided into 10 five-response segments and MLR and SCS were calculated for each segment. Reliability estimates were obtained for the two language measures for varying numbers of response segments. The reliability analysis suggests that MLR scores based on 50 responses are of adequate reliability for most research purposes; however, the reliability of SCS values based on 50 responses may represent less precision than is desired in some situations. From the data presented the number of response segments necessary to achieve given levels of reliability can be estimated. *(Authors' summary)*

207. EVERHART, R., Literature survey of growth and developmental factors in articulatory maturation. *J. speech hearing Dis.*, 25, 1960, 59-69.

Whether or not the child develops acceptable articulatory patterns depends upon numerous complex elements, internal and external to the child. In this article brief summaries are given of investigations exploring the relationship of articulatory development to certain variables. There appears to be a positive correlation between low intelligence and articulatory disorders. Increasing chronological age and its consequent neurophysiological maturation aid articulatory competency. Reading and articulatory maturation appear to be interrelated parts of linguistic function. No significant differences existed between dyslalic Negro and white boys except those favoring the Negro boys for age of sitting alone and the white boys for age of bladder control. No differences existed between Negro and white girls. Articulatory defects analyzed by sex show greater incidence among boys than girls. In some instances articulatory difficulty may be related to failure to establish unilateral cerebral dominance. Speech generally is felt not to develop until the large muscular mechanisms have matured sufficiently. Other variables needing experimental exploration are motor coordination, neurological impairment, bi-

lingual background, birth injuries, and psychological orientation. *(S.I.G.)*

208. GREWEL, F., How do children acquire the use of language? *Phonetica*, Basel, 3, 1959, 193-202.

Speech consists of sound production (articulation) and active use of language. Developmental disturbances may be due to a dyslalia or a linguistic disturbance; in the latter case, the child is able to reproduce sounds but not the word composed of those sounds. The conception that children imitate language of adults in the course of speech development is not correct, for adults probably instinctively adapt their language to the child's level when they speak with a child. This is done by slowing down the rhythm, changing the melody, and decreasing the dynamic accent. Of special importance is the melody of speech: perhaps it is the first factor which the child imitates independently of the use of words. So far as the melody of speech is concerned, the teaching of speech calls for an adaptation to the child's level of development. *(Excerpta Medica, XI)*

209. HENRIKSON, E., Psychological aspects of the development of speech and language. *Arch. phys. Med. Rehab.*, 41, 1960, 95-102.

The author discusses the development of speech and language, and then describes the influence upon them of such matters as 'mothering,' environment in general, hearing loss, intelligence, organic defects, socio-economic status, and other factors. *(J.L.S.)*

210. IRWIN, O. C., Infant speech: effect of systematic reading of stories. *J. speech hearing Res.*, 3, 1960, 187-190.

This study was designed to test the effect which systematic reading of stories would have on phonetic production of very young children. Subjects were 34 children; the experiment began in their thirteenth month and ended in their thirtieth month. During this period books were furnished weekly and a regimen of reading was prescribed for the children in the experimental group ($N = 24$), but not for the children in the control group ($N = 10$). Spontaneous vocalization of each of the 34 children was recorded by paper and pencil in the international phonetic alphabet in home visits during each two-month period throughout the experiment. Little difference was found between the groups in the mean scores for phoneme frequency until about the seventeenth month; from then on the difference increased consistently with the experimental group having higher scores than the control group. *(Author's summary)*

211. KAHANE, H., KAHANE, R., and SAPORTA, S., Development of verbal categories in child language. Bloomington, Ind.: University Research Center, 1958. 65 p.

The purpose of the present study is to demonstrate the development of the verbal categories in child language. This development is analyzed in terms of two stages that are indicated for each category. The two stages are referred to as the i-stage and the ii-stage. The ii-stage corresponds in structure to the adult language; it is the stage in which a contrast in meaning is correlated to a contrast in form. The i-stage, on the other hand, does not yet show this correlation. The meanings are assumed to be the same as in the ii-stage, but no form contrast signals the contrast in meaning. In the ii-stage of tense, for example, the meaning contrast past; non-past is accompanied by a form contrast 'did : do,' whereas in the i-stage the same two meanings past and non-past are expressed by the one form 'do.' This dichotomy between the i-stage and the ii-stage forms the basis of the entire study, which is a diachronic study. Obviously, in a non-genetic analysis, the i-stage could be described synchronically, i.e., autonomously, without reference to adult speech. Here, however, in spite of the risks involved, the two stages are treated in terms of one another. Consequently, only those patterns are included that show both stages (although not necessarily in the same language). Patterns that might be interpreted as occurring in the i-stage without a further development in the ii-stage, or those occurring in the ii-stage for which no corresponding i-stage appears in our material are omitted . . . The study is based on material in three languages, English, German, and French, to each of which the same system of analysis is applied . . . The bulk of the material stems from children in their second and third years. Most of the categorical contrasts are developed

by the end of the third year. That the ii-stage is rather advanced by that age does not imply, of course, that the i-stage has completely disappeared; many i-patterns coexist for some time with the ii-patterns . . . *(Child Develpmt. Abst. Bibl.)*

212. McCARTHY, D., Language development. *Monogr. Soc. Res. Child Develpmt.*, 25, 1960, 5-14.

At the outset the author poses two questions, one having to do with the individual differences in language development and another concerning procedures that might be employed in order to promote verbal skills in children and the prevention of speech and language disorders. Answers to these questions are then given in part as the writer proceeds to examine both psychological and physiological developmental processes. The importance of prelinguistic utterances are stressed. At first, the utterances are solely connected with vegetative processes but soon take on social significance as mother and others react to the early sounds. Language, *per se*, is in the first stages of development as the infant reflects back by cooing and babbling. The author cites results from studies dealing with prelinguistic and early linguistic behavior. In the main there appears to be agreement that infants respond to the human voice some time between the second and fourth months. Syllabic utterance takes place between the fourth and sixth months and by the tenth month there is imitation of sound stimuli. The Orvis Irwin Studies are cited which present evidence that vowel sounds comprise the earliest non-crying vocalization. Four different vowels are heard during the first two months and one vowel is added to the infants' repertoire every two months during the first twelve months of life. These same studies show that consonants exceed vowels at the age of one year. By two and one-half years of age almost one-half of the consonants are utilized. Ratio of vowel consonant utterance is as follows: age one year—1 consonant to 2 vowels; age two years—1 consonant to 1 vowel. Evidence is cited which shows that in normal development, front vowels are learned first and back vowels later. The opposite is the case with consonants. The point is made by the author that cooing and babbling behavior follow the establishment of vegetative function of breathing and eating. She cites H. Shohara who has identified all speech sounds with movements of tongue, lips, etc., necessary for chewing and swallowing. Early consonants are (k) and (g). Later developing consonants are those associated with fine motor control of the tongue blade and tip. Postural control makes some difference in vocal activity. The child babbles as he learns to sit and speaks his first word as he masters the skill of standing. The point is made that there is a reciprocal relationship between vocalization mastery and the mastery of other motor skills. The average number of words spoken at age one is three. This can vary of course with each child. After having examined structural and physiological correlates of infancy, the author then discusses psychological factors in development of vocalization. The point is made that the mother is the first language teacher and that only children talk earlier and better than do those with siblings. Although the quality of the mother-child relationship is difficult to measure, there is some evidence that merely the amount of mother-child contact is not all that should be considered. Being the child's primary love object, the mother exerts great influence on the social response of the infant. Language development is inextricably interwoven with interpersonal relationships established between mother and child. The author cites the Geber study of African children in the first year of life. She states that when a culture is without anxiety due to pregnancy, and a child is always in extremely close contact with its mother during work, eating, and sleeping periods there is evidence that the psychomotor development is in advance of Europeans and Americans. The author cites the functional description of language development by Myklebust who states that language is divided into three types: inner, receptive, and expressive and adequate development is contingent upon 'psychological integrity.' Language development and intelligence are discussed and McCarthy makes the observation that it is safe to say that speech development is delayed in mentally defective children. She hastens to point out, however, that children who speak late are not necessarily mentally retarded. Intellectually gifted chil-

dren, however, are usually early, efficient speakers. Best estimates reveal that the average child utters 15,000 words per day or 5,500,000 words per year. The author cites the development of the Griffiths test which includes a speech and hearing scale for children and comments that this scale should be used as a research and clinical tool. As regards the future of research in language development, the author feels that it will have to proceed along lines of a team approach which would call for coordinated interdisciplinary efforts of engineers, psychologists, linguists, speech pathologists, and anthropologists. The teaching of phonetics to larger groups of research investigators is felt to be imperative. *(H.J.O.)*

213. NEWLAND, T. E., Language development of the mentally retarded child. *Monogr. Soc. Res. Child Develpmt.*, 25, 1960, 71-87.

The author states at the outset that the term 'development' denotes changes which occur in the organism due to neural growth and environment. For purposes of discussion, he uses the 'verbal behavior' to be denoted by the term language. This includes use of words in speaking, reading, and writing. Language development, rather than social-psychological aspects of language development, constitutes in the main, the basis of the article. The author makes mention of the abandon with which the words 'mentally retarded' are employed. He restricts his use of the term only to those children whose learning aptitudes are about one-half to three-fourths of their chronological peers and whose problems are due to biological rather than environmental causes. Eight divisions appear in the article; (1) impact of normative research, (2) sensitivity to psychometric aspects, (3) the deviate in the normative picture, (4) attenuating factors, (5) vocabulary concept comparisons between the retardate and the non-retardate, (6) concepts as a basis for further integrating of experience, (7) reinforcement of the conceptualization process, (8) other research possibilities. The writer summarizes his thoughts in a short paragraph at the end. In a general way we know that the mentality of a six-year-old mind in a six-year-old body is different from a six-year-old mind in a sixteen-year-old body. Our knowledge of the conceptualization process of persons who are so different, however, is scanty. Some factors which contribute to the less effective utilization of the basic potential of the mentally retarded, as regards language, are socioeconomic in nature. It has been observed that two children with the same MA who come from homes of different socioeconomic levels can show great differences in language performance. Templin has shown differences in the numbers of different words used by retarded children coming from different socioeconomic levels. In the main, talking is closely associated with positive interpersonal relationship. Up to this point language development work has been geared to the repetition concept. Much research needs to be done as regards vocabulary-concept comparisons between the retarded and non-retarded child. One expects that certain concepts incorporate far less for a younger than for an older child. One has reason to believe that a real difference in concept dimension exists between retarded and non-retarded as well. Concepts help to integrate but even so the quality of integration of the retardate is quite different from the non-retardate. In teaching methods, more emphasis might well be placed on processes which form a basis for concept formation and language development. As regards research needs, there is real need for an integrated pattern of large-scale normative and comparative studies. Need for longitudinal studies of language behavior of well identified groups of mentally retarded is evident. Studies which yield a better understanding of the nature of the impact of the social milieu on the development of the retardate are necessary. The relationship of gesture, faulty articulation, motor development, etc. to language growth would be useful. In the main there is need for fewer 'pot-shot' studies and far greater need for better conceived patterns of research based on acceptable psychological theory. *(H.J.O.)*

214. NICHOLAS, A., Reading with phonics. *Instructor*, 69, 1960, 98.

The findings of Miss Julia Hay (deceased) regarding phonics and reading are reported. For practical purposes in teaching

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beginning reading there are forty-four elementary 'speech sounds.' Eighty-seven per cent of all English syllables are purely phonetic, words containing unphonetic syllables are in part phonetic. Sixty-two per cent of English phonetic syllables will be commanded by the child upon recognition of short vowel blends. Another twenty per cent will be available to the child when he understands blends made long by final 'e' and long vowel equivalents. An understanding of vowels modified by 'y' will contribute another 10% to the child's reading ability. Information concerning availability of the Hay-Wingo-Hletko system of reading with phonics and workshops in the method are reported. *(N.J.C.)*

215. WEAVER, C. H., FURBEE, C., and EVERHART, R. W., Articulatory competency and reading readiness. *J. speech hearing Res.*, 3, 1960, 174-180.

A speech articulation test and the Gates Reading Readiness Test were administered to 638 children in grade one during the first four weeks of school. On the basis of the data obtained, the following statements seem to be justified: Reading readiness and acquisition of adequate speech are to some extent related, although the proportion of variance common to reading readiness measures and articulation measures is quite small. It is possible that the Gates Reading Readiness Test measures part of an underlying variable causal to the acquisition of both reading and speech. The strength of the relationship between reading readiness and articulatory skill in grade one seems to be about the same for each of the Gates subtests and for two age groups, one younger than six years and three months and the other older. *(Authors' summary)*

VOICE

216. ERNST, R., Stroboskopische untersuchungen bei berufssprechern. (Stroboscopic examinations of professional speakers.) *H. N. O.*, Berlin, 8, 1960, 170-174.

The writer compared stroboscopically the larynx of professional speakers before speaking and after they had spoken for some time. He used the flashlight stroboscope (Lichtblitz-stroboskop) of Timcke. The compass and the middle range of the voice were tested. The examinees were asked to say 'ha' during stroboscopy. The form of the vibrations, the part that vibrated, the amplitude, the breadth of the vibrating part of the vocal cords, the duration of the closing of the glottis, differences in the amplitude of the two cords and the shape of the edge of the cords were registered. Forty-four cases had no complaints before or after voice work. Among these, 22 showed incomplete closure of the glottis after speaking. Ten other cases (of the 44) showed visible abnormalities, incomplete closure, pressure, or weak amplitudes before speaking, and these signs increased after speaking. Forty-seven cases had no complaints before speaking but complained about some voice difficulties after speaking. Among these, 25 showed abnormal stroboscopic pictures after speaking only. In 33 cases a change in the laryngologic-stroboscopic picture for the worse, especially in high tones, took place. The stroboscopic pathologic pictures conformed with those of the other two groups. Since the incomplete closure of the glottis after work is visible in the middle and posterior third, the lateral and the transverse muscles seem to be involved. In cases which used a louder voice after some time of speaking, the vocal and the cricothyroid muscles were especially overengaged. If one vocal cord vibrates less strongly it is most frequently the left one. Differences between the frequency of vibrations on one and the other side could not be observed. *(E.F.)*

217. FAABORG-ANDERSEN, K., and SONNINEN, A., The function of the extrinsic laryngeal muscles at different pitch. *Acta oto-laryngol.*, Stockholm, 51, 1960, 89-93.

Recordings of electromyographic activity detected with concentric needle electrodes inserted into sterno-thyroid, thryo-hyoid, and mylo-hyoid muscles, as well as x-ray photographs of the larynx, were obtained during sustained phonation for 13 adult subjects. Interpretation of the x-ray photographs indicates that shifts in the gross position of the larynx accompany shifts in pitch during singing. The onset of electrical activity was found to precede the onset of an audible tone by 0.3-0.5 seconds. Other results chart the manner in which electro-

myographic activity varies with variations of vocal pitch. *(R.C.B.)*

218. FABRE, Ph., and FREI, A., Analyse harmonique des glottogrammes et des phonogrammes de la voix chantée. (Harmonic analysis of glottograms and phonograms of the singing voice.) *Ann. Oto-Laryngol.*, Paris, 76, 1959, 459-463.

A glottograph—described in another paper—constructed by the authors to analyse the movements of the vocal cords of a given phoneme, in this case 'O' of 200 Hz., and an audiospectrograph from Brüel and Kjoer were employed in order to show the relation between the oscillographic diagrams of the given phoneme produced with singing voice. It became evident that for the low frequencies in the spectrum the glottic data are preponderant while for growing frequencies the phonogram shows the characteristic of the oro-pharyngeal cavity. *(Excerpta Medica, XI)*

219. HOLLIEN, H., Some laryngeal correlates of vocal pitch. *J. speech hearing Res.*, 3, 1960, 52-58.

Indices of laryngeal size were obtained by a lateral X-ray procedure in six males and six females with very low voices and in six males and six females with very high voices. Significant trends for laryngeal size were found both between sexes and between pitch groups within sexes. It is concluded that individuals with low pitch levels exhibit generally larger laryngeal structures than do individuals with higher pitch levels. *(J.F.J.)*

220. HOLLIEN, H., Vocal pitch variation related to changes in vocal fold length. *J. speech hearing Res.*, 3, 1960, 150-156.

Four groups of subjects were chosen primarily on the basis of pitch range, age, ability to produce specified vocal tones easily, and absence of speech or voice defects. A laryngoscopic photography procedure allowed for measurements of the length of each subject's vocal folds under five conditions, one of no phonation, four of phonation, at four different fundamental frequencies. Differences in vocal fold length among groups and among pitches for the same subject were determined. The resulting conclusions are: (a) As the fundamental frequency of phonation is raised, the vocal folds systematically lengthen. (b) In the abducted position the vocal folds are as long as or longer than they are for any condition of phonation. (c) Low pitched individuals exhibit generally longer vocal folds than do individuals with higher pitch levels between the sexes and within a sex. (d) The findings are generally consistent with the myoelastic theory of voice production. *(Author's summary)*

221. HOLLIEN, H., and MOORE, G. P., Measurements of the vocal folds during changes in pitch. *J. speech hearing Res.*, 3, 1960, 157-165.

Six adult males, who had demonstrated the ability, were required to expose the entire anteroposterior length of their vocal folds while phonating three notes within each octave of their pitch range. Measurements were made from laryngoscopic photographs. From these measurements the following conclusions are drawn: (a) length of vocal folds increases systematically with increases in vocal pitch for the natural register; (b) vocal folds in abduction are longer than in phonation; (c) no single pattern of elongation or shortening is apparent for pitches in the falsetto register; (d) magnitude of lengthening is no greater in one portion of the pitch range than in any other; (e) there is some evidence of a 'stair step' lengthening function; (f) general vocal fold length appears to bear a moderate relationship to pitch level but does not correlate with the absolute fundamental frequency being phonated. These data tend to support the myoelastic theory of voice production. *(Authors' summary)*

222. KELEMEN, G., Basic anatomy and neurophysiology of speech and language. *Cerebral Palsy Rev.*, 50, 1960, 8-9.

The author reviews the controversy concerning the nature of vocal cord vibration. The classical myo-elastic theory and the neuro-chronaxic theory are compared in the light of anatomic and clinical information. The author suggests that further research in the anatomy of the larynx is necessary. *(M.M.H.)*

223. LUCHSINGER, R., and PFISTER, K., Ergebnisse von kehlkopfaufnahmen mit einer zeitdehnerapparatur. (Movements of the vocal cords with a time-extending ap-

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paratus.) *Bull. Schweiz. Akad. Med. Wiss.*, 15, 1959, 164-177.

A survey is given of the construction of the high speed apparatus used for the analysis of the movements of the vocal cords in the larynx in normal subjects, and a series of experimental results are presented. By means of a time-extending arrangement, with registration of the tone and intensity of the voice, it was shown that the opening of the glottis increases slightly with rising tone at the same intensity of the voice. At extremely high head tones (up to $g^3 = 1700$ Hz) the vocal cords show no more lateral vibrations corresponding to the tone. With the strongly stretched vocal cords, only the dorsoventral surface reflexes are seen whose frequency agrees with the whistling tone coming from the mouth. An attempt is made to explain the construction of the higher head tones by comparison with a model of a membrane vibrating in one direction surmounted by a tube with a coupling effect. *(Excerpta Medica, XI)*

224. PORTMANN, G., ROBIN, J.-L., and LAGET, P., Sur la physiologie de la voix. (The physiology of voice production.) *Rev. Laryngol. Otol. Rhinol.*, Bordeaux, 80, 1959, 1-20.

The authors are well known adherents of Husson's neurochronaxic theory on voice production. They discuss a number of experiments and arguments on (1) electromyography in vivo and in vitro of the various intrinsic laryngeal muscles, (2) rhythmic stimulation of the recurrent and superior laryngeal nerves in animal experiments, (3) vibration of the vocal folds without air flow and (4) the chronological position of the beginning and the end of the laryngeal virbrations and the corresponding sound. Sabouraud and Germy's results on four are interpreted as decisive in favor of Husson's theory. A number of observations are thought to be inexplicable on the basis of the myoelastic theory. In a large number of experiments they never obtained laryngeal vibrations without air flow. *(Excerpta Medica, XI)*

225. VAN DEN BERG, J., and TAN, T. S., Données nouvelles sur la fonction laryngée. (New results on the laryngeal function.) *J. Fr. Oto-Rhino-Laryngol.*, Lyon, 3, 1959, 103-111.

Experiments on excised fresh human larynges by air are described. New methods for treating the larynges and to fix the arytenoids were developed. Flow, lateral forces on the arytenoids, longitudinal force on the vocal folds, and compression of the thyroid were varied, subglottic pressure, pitch, and intensity were recorded. The vibrational patterns were studied under stroboscopic light by means of a delta f generator. The characteristics of chest, mid, and falsetto voice and their dependence on the variables were determined. It was shown that excised larynges can be vibrated under the same conditions and with the same results as during life. *(Excerpta Medica, XI)*

SPEECH DISORDERS

Aphasia

226. ARNOLD, V. G., Angeborene worttaubheit: akustische agnosie. (Congenital word-deafness: acoustic agnosia.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 39, 1960, 52-58.

Loebell's original paper describing the characteristics of psychogenic deafness is referred to. Other authors later furnished more information on central hearing disturbances in patients with cerebral lesions. Various characteristic clinical entities emerged which were similar to those found by Luchsinger who tested the central hearing apparatus of adults who had been deaf-mute. Present knowledge of the function of certain sections of the brain in the interpretation of music is discussed and it is concluded that the non-dominant cerebral hemisphere plays the leading part in this respect. In contradistinction it has long been realized that the dominant side of the brain largely controls the function of speech. It is further argued that the perfect coordination of both sides of the brain is essential to the functions of speech and music. Contrariwise certain cerebral lesions explain why the development of speech may be restricted in the same way as the acoustic-agnosic functions which are generally ascribed to musicality. It is again stressed that cases of central hearing disturbances should be investigated by all the means available in

modern audiometry. There is much evidence that certain speech disorders in children (e.g. acoustic agnosia) are due to central disturbances of hearing. Further study of these should provide much needed information in these important disorders of childhood. *(Author's summary)*

227. BERRUECOS TELLEZ, P., Muestreo estratificado, con probabilidad proporcional al tamaño de los estratos, en la poblacion escolar urbana, diurna, del Distrito Federal, Mexico, sobre los defectos del lenguaje, de la comprension de la lectura y de la coincidencia de ambos. (A stratified sampling, with proportional probability to the size of the strata, of the urban, day, grammar school population of the Federal District, Mexico, regarding aphasic syndromes.) *Acta audiol. foniat. Hispano-Amer.*, Mexico City, 1, 1959, 107-120.

The great variety of syndromes associated with aphasia in children, led the Mexican Institute of Hearing and Speech to conduct this research, with the assistance of the General Bureau of Biostatistics and Biometry of the Ministry of Welfare and Public Health. The research was conducted on the grammar school population of the Federal District, Mexico. This population consists of 495,460 children, including all economic strata, between the ages of 6 and 14. The difference between census and sampling is established and it is specified that the procedure for the above mentioned work was that of 'Stratified Sampling with proportional probability to the size of the strata,' followed by 'Sequential Sampling.' The sampling was formed by 19,769 children attending 45 schools. The questionnaire used is included, as well as the 'Ratio Estimate' formula, which allowed the results obtained in such sampling to be extended to the whole Federal District. The following results were obtained:

4,135 children with speech defects:	0.8 %
9,524 children with reading defects:	1.9 %
3,734 children with both defects:	0.75%
17,393 total number of children with those problems:	3.45%

of the grammar day school population of the Federal District. Such a population is supposed to be entirely composed of normal children as all schools imparting special education were excluded. The urgent need for specialized therapists in this field is considered. *(Author's summary)*

228. BERRUECOS V., M. P., Afasia sensorial y ceguera en la infancia. (Aphasia and blindness in infancy.) *Acta audiol. foniat. Hispano-Amer.*, Mexico City, 1, 1959, 237-260.

After making general considerations as to the acquisition of language and to the classification of congenital aphasias, the author presents two cases which she considers as 'triple-multiple handicaps,' both diagnosed at the Instituto Mexicano de la Audición y el Lenguaje as: A) sensory aphasic with amaurosis, and B) sensory aphasic with echolalia and blindness. The data gathered during interviews and tests are included. She then gives a list of the literature she reviewed, where she found only diagnoses with which she doesn't agree and points out that invariably there are faulty diagnoses that affect the patient in a sad manner, such as Keeler's, who presents a syndrome called 'autistic schizophrenia,' by Bender, in which according to her, the picture given is that of a congenital aphasia. She finds absolutely nothing written in relation to congenital aphasia and blindness, or to rehabilitatory procedures to be followed under such circumstances. Then she proceeds to adapt McGinnis's Association Method to the visual conditions of case B, the only one that has continued under her guidance. Finally, she explains the fantastic progress achieved with the patient and demonstrated him in all aspects of his education as explained in her paper. *(Author's summary)*

229. DIEDRICH, W. M., and POSER, C. M., Language and mentation of two phenylketonuric children. *J. speech hearing Dis.*, 25, 1960, 124-134.

Two sibling cases of congenital aphasia are reported who were later diagnosed as having phenylketonuria. During three years of control on a phenylalanine-low diet, there was noted marked improvement in language as well as in functional mentation. Of particular interest was the fact that the diet was not initiated until the subjects

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were four and three years of age respectively. It is suggested that speech pathologists be aware of phenylketonuria as a cause of delayed language development in children who otherwise may appear near normal. *(Authors' summary)*

230. DOEHRING, D. G., Visual spatial memory in aphasic children. *J. speech hearing Res.*, 3, 1960, 138-149.

Accuracy of memory for the location of a visual stimulus as a function of delayed recall, interference with fixation, and duration of exposure was investigated with a group of 20 children classified as aphasic, 20 normal children, and 20 deaf children. Results showed that the accuracy of performance of all three groups was unaffected by variations in duration of exposure, was decreased by about the same amount for each group by delay of recall and interference with fixation, and changed as a function of chronological age in about the same way for all three groups. The aphasic group was, however, significantly less accurate than the deaf group and the normal group in terms of total amount of error. These results suggest that children classified as aphasic are retarded in some, but not all, aspects of visual perceptual ability. *(Author's summary)*

231. EISENSON, J., When and what is aphasia. *Monogr. Soc. Res. Child Develpmt*, 25, 1960, 89-95.

The author discusses the topic of aphasia in terms of (1) general intellectual functioning, (2) attention and memory, (3) morbidity of attention, and (4) views of the nature of aphasia. He points out early in the discussion that it must be remembered that the brain-damaged person, just as the non-brain-damaged, has well developed interests, attitudes, and inclinations. Premorbid tendencies are likely to become amplified with the onset of brain damage. Factors often overlooked in testing the brain-damaged include age and intellect. Intellectual factors affected that are altered with brain damage are attention, memory, perceptual ability, thinking, perseveration, and linguistic ability. The brain damaged person tends to become more concrete in his behavior, and shows increase in emotional lability and anxiety. As regards intellectual functioning, the brain-damaged persons averaged about 16 points below the psychiatric patients on the Wechsler-Bellevue Intelligence Test when studied by Morrow and Mark. Twenty-two males constituted the test sample. Verbal I.Q.s of the brain-damaged were higher by 10 points than were their Performance I.Q.s. Patients with lesions in the left hemisphere showed greater impairment in verbal intelligence than those with bilateral or right hemisphere damage. Investigations generally reveal that ability to attend and recall is affected by brain lesions. Useful instruments for measuring this function are the Wechsler Memory Scale and the Hunt Scale. As far as attention is concerned, Eisenson suggests that the inability to select the relevant from the irrevelant and also perseveration are outstanding characteristics. Summarization of the studies of personality change associated with brain damage shows the following: (1) excessive concretism, (2) diffuse and overly generalized modes of organizing their experiences, (3) uncontrollable emotional outbursts, (4) a marked sense of personal inadequacy. The author states that persons with organic brain damage who are not aphasic also suffer from some degree of linguistic impairment. In other words, disturbance in language formulation is not exclusively a disturbance of the aphasic. As opposed to the mentally deficient, the aphasic is not reliable or even in his performance. According to Hughlings Jackson the aphasic suffers from a disturbance in propositional language. Other views of aphasia are presented, which suggest that this disorder is a 'subtractive' disturbance that impairs the individuals's ability to deal with symbols. Another point of view is that aphasia is primarily a linguistic rather than a basic symbol problem. Birch views aphasia as a generally disruptive disturbance in which cortical trauma interferes with normal patterns of excitation. Goldstein views the disorder chiefly as a psychological disorder in which reduced ability to deal with abstractions is evident. Another viewpoint expressed is that aphasia is caused by cortical and/or subcortical damage and the forms it takes are dependent upon site and amount of brain damage, physiological mechanisms involved, and the nature of psychological and

linguistic impairments. The author then states his bias and asks that a distinction be made between early aphasia and maintained aphasia. In the majority of cases where damage has been to the left hemisphere there will be aphasic involvements. Some patients make a relatively quick recovery, but about half of them show signs of aphasia a year later. About one-fourth of the patients show evidence of the disorder years later and a few show persistent involvement. Among those patients who are classed as chronic aphasics, it is observed that they show high ego-orientation, better adjustment to hospital than to home situations, high proportion of withdrawal, and high proportion of constitutional psychopaths. They often assume privileges of the aged and also exercise great silence. In closing the author reviews eleven possible neurological causes of aphasia. *(H.J.O.)*

232. LEE, L. L., Two kinds of disturbed communication. *Gen. Semant. Bull.*, Nos. 22 & 23, 1958, 47-50.

The normal speaker's communication is disturbed in relationship to a general semantic orientation for he perceives similarities and permanence, and he tends to confuse descriptions and low order abstractions. The aphasic speaker's communication is disturbed for in terms of the culture he perceives differences, fluidity, individuals, and concreteness. The immediate goals for the aphasic are not the general semantic goals. The aphasic must be taught to structure his perceptual world in accordance with the language. In terms of 'cultural patterns of thought' general semantics and language therapy have much in common. *(J.B.R.)*

233. MARTINI, G., and SARACCO, C., Ricupero del paziente afasico: diagnosi e trattamento. (Recovery of the aphasic patient: diagnosis and treatment.) *Minerva fisioter., Torino*, 3, 1958, 118-121.

In order to obtain better stimulation in the diagnostic exploration, use can be made of the Halstead-Wepman technique as modified by Martini-Saracco. In this technique, the stimuli, presented to the patient in an isolated form upon a screen, originate from a rotating disc behind the screen so that the examiner on the other side receives the question at the same time. Other tests (for intelligence, memory, character, personality, etc.) should be carried out simultaneously. Young subjects who have become aphasic in connection with traumata recover more readily than those in whom the aphasia is due to vascular lesions. Subjects with low mental and intellectual capacities give the most satisfactory results on account of their lesser linguistic requirements. The best therapeutic results are obtained in extraverted subjects, whereas a state of persistent euphoria adversely affects the results. Treatment should be carried out in an isolated and quiet place, without spectators. The stimuli, which should be well-graduated, should be gradually intensified and combined, and be adapted to the personality and character of the patient. In cases of right-sided paralysis the patient should be taught how to write with the left hand. The exercises should be performed daily, and for progressively increasing periods with periods of rest in order to avoid fatigue. *(Excerpta Medica, XIX)*

234. STOICHEFF, M. L., Motivating instructions and language performance of dysphasic subjects. *J. speech hearing Res.*, 3, 1960, 75-85.

The speech behavior of 42 dysphasic subjects following three types of motivating instructions was investigated in terms of number of errors on naming and reading tasks and self-rating of performance. Patients subjected to discouraging instructions did significantly more poorly on language tasks than did those under encouraging instructions, and rated their performances more poorly. These results are attributed to anxiety and indicate the need for expressing positive attitudes and actions concerning language recovery. *(J.F.J.)*

235. TIKOFSKY, R. S., KOOI, K. A., and THOMAS, M. H., EEG findings and recovery from aphasia. *Neurology*, 10, 1960, 154-156.

A sample of 33 adult aphasic subjects who had received speech therapy for a period ranging from two months to two years was divided into two groups, those who made fair to good progress in therapy, and those who made no progress. EEG recordings for each of the subjects were made before or early in the course of the

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subject's therapy. Their recordings were analyzed in terms of the background frequencies for each hemisphere and delta distribution and incidence over the left and right hemispheres. The results of the statistical analyses indicated relationships between the EEG variables and recovery of language. Poor prognosis was usual when patients exhibited abnormally slow EEG patterns. A comparison of the basic frequencies of the right hemispheres differentiated the two progress groups better than those of the left hemisphere, although both were highly statistically significant. *(B.S.S.)*

236. VALLADARES, C. M., Estudio sobre la classificación y nomenclatura de los trastornos afásicos. Terapia rehabilitatoria. (A study about the classification and nomenclature of the aphasic syndromes and suggested rehabilitation therapy.) *Acta audiol. foniat. Hispano-Amer.*, Mexico City, 1, 1959, 143-160.

The author briefly discusses the different rehabilitation procedures for the different symptoms and syndromes of aphasia in adults and children. The theory of the McGinnis Association Method is detailed. Several factors are taken into consideration in relation to the prognosis: the age and personality of the patient or pupil, the flexibility of the rehabilitatory technique, the extension and degree of the lesion, and the time when it occurred. It is agreed the training should start as soon as the patient or pupil is ready for it. Several educational norms and ideas from different authors are presented. On classification of aphasia in children and therapy measures, valuable opinions are summarized. The author affirms that only with detailed observation added to formal and informal tests, can diagnosis be correctly integrated. *(Author's summary)*

237. WILSON, L. F., DOEHRING, D. G., and HIRSH, I. J., Auditory discrimination learning by aphasic and nonaphasic children. *J. speech hearing Res.*, 3, 1960, 130-137.

The performance of a group of 14 children classified as sensory aphasic was compared with that of a group of 13 nonaphasic children on a task where the children were taught to associate four auditory stimuli with four visually-presented letters of the alphabet. The auditory stimuli differed in both quality and duration, and consisted of a long tone, a short tone, a long noise, and a short noise. Over half of the aphasic children learned the task in about the same number of trials as the nonaphasic children. The remaining aphasic children, six in number, failed to learn the task within the allotted number of trials. This difference in learning ability within the apahsic group was unrelated to age, IQ, or amount of hearing loss. Informal observations on further training of the children who failed to learn the task indicated that they were able to make the required discriminations among auditory stimuli, and that their poor performance was the result of a specific difficulty in learning to associate four visual stimuli with four auditory stimuli. *(Authors' summary)*

238. WOOD, N. D., Clinical problems in speech and language. *Arch. phys. Med. Rehab.*, 41, 1960, 103-110.

Because of the wide diversification of speech and language problems, the aspect of language disorders is emphasized in this report. In general, this discussion is concerned with the rehabilitation of language disorders as they occur in both children and adults. More specifically, the subject matter is related to aphasia, alexia, and agraphia as caused by cerebral vascular accidents, brain tumors, or head injuries and congenital aphasia caused by anoxia, febrile episodes, or birth injury. Clinical definitions of these problems, diagnostic needs, and therapeutic suggestions are presented. *(J.L.S.)*

239. WOOD, N. D., Language disorders in children. *Monogr. Soc. Res. Child Develpmt*, 25, 1960, 15-23.

The author states that normal language acquisition can be impeded by a deficit in auditory acuity, mental capacity, emotional well-being, or adequate functioning of the central nervous system. C.N.S. malfunction can vary in degree and type. The most frequently employed terms in language disorders due to central nervous system involvement are aphasia, alexia, and agraphia.

All of these conditions cause observable behavior which points toward inability to use symbols adequately. The author discusses seven topics: (1) delineation of aphasia, (2) differentiating aphasia from mental retardation, (3) therapeutic procedures for aphasia, (4) early diagnosis indicated, (5) delineation of alexia and agraphia, (6) tentative research findings, and (7) educational needs. Aphasia or dysphasia are terms applied to language problems of reception or expression. The conditions of aphasia or dysphasia extend beyond that of speech production, as they are basically conditions that refer to the inability to receive and/or classify spoken symbolic stimuli. The inadequate reception of written stimuli is known as alexia, and the inability to express oneself in writing is termed agraphia. Inability to comprehend numbers is referred to as acalculia, and disturbance in utilization of music symbols as amusica. The author states that even though aphasia is caused by cerebral pathology, not all cerebral pathology results in aphasia. The existence of certain behavioral responses indicative of cerebral pathology may be in evidence in the child who is aphasic, but should not be confused with the aphasia. Certain behavioral concomitants such as distractibility, disinhibition, perseveration, and catastrophic reactions must not be confused with the aphasia itself. The author points out in her discussion of mental retardation and aphasia that the aphasic child can plan in a nonsymbolic situation and can learn from past experiences that are nonsymbolic in nature. The mentally retarded differs in degree from the normal whereas one can think of the aphasic as differing in kind. If compared graphically, the mentally retarded child would show a generally depressed curve as regards performance. The aphasic however, would show a curve which would be extremely low only in those activities which demanded his use of symbols, abstractions, and judgment. As regards therapeutic procedures, the author suggests training on individual speech sounds with the receptive patient. The association of the spoken with the written stimulus is important. However, with the predominantly expressive aphasic, the emphasis on the whole word seems to produce better results. As a result of four years of study the author suggests that with the passage of time there is a tendency for the child with receptive aphasia to become more like a deaf child, the child with expressive aphasia to become more like the emotionally disturbed child, and the child with mixed aphasia to resemble the mentally retarded. Early diagnosis is important, for as the child grows older, other problems become superimposed which make differentiation more difficult. However, the real diagnosis of aphasia must of necessity await that period in development when one could normally expect verbal use of symbols and utilization of those symbols for making judgment. Alexia and agraphia are interrelated. Adequate diagnosis must await that period when reading and writing normally occur. The author presents results of her research with 100 case histories between ages six and nine years that were inspected for trends. Sixty-nine were males and thirty-one were females. In writing and drawing activities, seventy-three used the left hand, six were ambidextrous and twenty-one were right handed. Fifty-nine showed reversals, suggesting that cerebral dominance is a factor. In seventy-two cases delayed speech and language development was reported and twenty were reported as having been classified as behavior problems in school. Electroencephalographic exploration of forty of the patients suggested further neurological study. Assessment of a psychological nature revealed an I.Q. range of 86-111. It was observed that these children often showed defeat responses during the testing session. Spatial confusion was apparent in many of the children. Terms applied by parents to describe the children often included 'daydreamer,' 'forgetful,' 'lazy,' 'stubborn' and 'inconsistent.' The author asserts that even though programs of training for deaf, mentally retarded, etc. may yet be lacking, they are recognized as needed programs whereas the child with difficulty in language learning is not yet recognized in the main by those who make provisions for education of the handicapped. To help the child organize incoming stimuli so that useful concepts can result should be the basis upon which the educational program should be structured. *(H.J.O.)*

XUM

ARTICULATION DISORDERS

240. BARKER, J., A numerical measure of articulation. *J. speech hearing Dis.*, 25, 1960, 79-88.

The study reported was undertaken to devise a method for measuring articulatory proficiency (the amount of speech understandable in ordinary conversation) that would (1) include all the sounds of the language, (2) represent speech adequacy in a quantitative manner, (3) be numerically accurate and permit statistical manipulation, (4) be simple and convenient to use, and (5) be easily interpreted. It was intended that this method should substitute knowledge of whether a child misarticulates or omits a sound for the more cumbersome and subjective method of having judges place the speech sample on a severity continuum. Numerical values were assigned to each sound of the language in direct proportion to the number of times that sound would probably occur in a sample of 100 sounds (relative to the Bell Laboratories frequency of occurrence study done by French, Carter and Koenig). Two Articulation Scores were constructed, the AS (equally prorating consonant values for all positions in which they occur in American speech), and the AS^1 (distributing the consonant scores according to their positions in syllables–initial and final). Vowels and diphthongs are given equal values in both scores. Forty-five children with articulation ranging from normal to severely defective were given picture articulation tests and assigned Articulation Scores. These scores were correlated with ratings by trained judges of the speech of the same children, resulting in an r of .94. The author reasons that since all definitions of defective articulation relate to listener judgments of speech, the close correlation obtained indicates that the AS and AS^1 are valid measures of articulatory proficiency. The differences between the AS and AS^1 were negligible. It is felt that the Articulation Score meets the requirements of accuracy, statistical manipulability, ease of interpretation, and convenience and simplicity of use. Tables giving AS and AS^1 ratings for the phonemes of American English are provided in the article. The author suggests their use clinically and in research. The need for further research regarding the use of medial sounds in articulation therapy and testing is indicated by the similar proficiency scores produced when syllable positions and word positions of sounds were used. *(S.I.G.)*

241. CHATEAU, M., Méthode de rééducation des troubles phonétiques fonctionnels chez l'enfant. (A re-education method for functional phonetic disturbances in children.) *Actualites odontostomat.*, 12, 1958, 551-553.

A description is given of a method of re-education in functional disturbances of speech in children. (1) The badly pronounced consonants are determined: usually s (and z), j (and ch), f (and v) and finally, r. (2) The children are asked to pronounce them slowly, continuing the sound for several seconds (example: ffffff), first by itself, then with a vowel (fffffa). (3) The sound is shortened to a quick fa. Then, interpolation of l (fla) and of r (fra). This method, which might be called 'from the pure consonant onward' requires only 5 min. 3 times per day, with a total of 30 min. It can be carried out under control of the parents. *(Excerpta Medica, XI)*

242. LE HUCHE, F., Reéducation des troubles de l'articulation. (Re-education in articulation disorders.) *Actualites Odontostomat.*, 12, 1958, 555-560.

A review is presented of the various disturbances of articulation: sigmatisms, palatine schisms, neurological affections (hemiplegia, Little's disease, athetosis, amyotrophic lateral sclerosis); auditory deficiencies, and delayed speech. A brief description is given of certain methods of re-education, particularly of the method of Chateau and the use of instruments called 'guide-langue' (little instruments which serve to hold the tongue in the correct position). The success of re-education depends in the first place on the degree of understanding and the pedagogic qualities of the teacher, who must devise variations to suit each individual case. *(Excerpta Medica, XI)*

243. MANGE, C. V., Relationship between selected auditory perceptual factors and articulation ability. *J. speech hearing Res.*, 3, 1960, 67-74.

Relationships were studied between articulation ability and five auditory abilities in normal-speaking children and children with functional misarticulation of [r]. The number or articulation errors showed a significant partial correlation with only one of the five auditory perceptual factors studied, phonetic word-synthesis ability. Normals differed significantly from defectives only in pitch discrimination, although normals achieved numerically higher mean scores in all cases. *(J.F.J.)*

244. MORLEY, M. E., Defects of articulation. *Folia. phoniat.*, Basel, 11, 1959, 65-124.

Articulation is a learned neuromuscular skill based on the physiological principles of motor learning. It involves receptor and effector processes which, through sensory feedback, control the co-ordinations and muscle movements for articulation. Defects of articulation occur when any of the processes involved are abnormal, or there is a failure to use the sounds of speech normally. Such defects have been considered in five groups, namely: (1) those secondary to a hearing defect, when the receptor processes are inadequate; (2) dysarthria, where normal receptor processes can act only on and through a damaged motor mechanism; (3) apraxic dysarthria or articulatory dyspraxia, where there would appear to be a breakdown between normal receptor processes and a normal motor mechanism; (4) dyslalia, where there is a failure to use the receptor-effector processes adequately; and (5) structural conditions of the lips, tongue, jaw, and palate may cause interference with the movements and coordinations for articulation when the receptor-effector processes are basically normal. Treatment for defects of articulation has been briefly outlined, based on the principles involved in the acquisition of any motor skill, and must be adapted to meet the need of each particular condition and individual. *(Excerpta Medica, XI)*

245. NETTER, J. C., La phonation en orthopédie dento-faciale. (Phonation in dento-facial orthopedia.) *Actualities Odontostomat.*, 12, 1958, 545-547.

Reference is made to the role of incorrect functional articulation of vocal sounds in the causation of deformations of the dental arches. Emphasis is laid on the necessity of examination of the phonetic articulation as a part of general functional examination, especially the assessment of the torus and the strength of the oro-facial muscles. It follows that re-education to normal pronunciation of vocal sounds plays an important part in the correction of dento-maxillary dysmorphosis. This treatment must be administered at the time of the primary dentition, before any apparatus is tried. In this way, the development of dento-maxillary deformations may be prevented. In patients who already have their permanent teeth, the re-educatory treatment of phonetic articulation must be begun as soon as the swallowing function has been normalized. In this way, a physiological decrease of the dento-maxillary deformation may be obtained, and a corrective apparatus will be necessary in only few cases. *(Excerpta Medica, XI)*

246. SAIZAR, P., Phonétique et prothèse. (Phonetics and dental prosthesis.) *Actualitiés odontostomat.*, 12, 1958, 561-565.

In addition to mechanical and aesthetic considerations, the construction of a dental prosthesis involves important phonetic problems. An upper and lower plate must be so devised that the patient is able to adapt his enunciation to the newly created condition. Swenson (1953) stated that the voice quality of a dental plate wearer improved if the plate is molded in accordance to the shape of the oral cavity. In order to prevent speech defects, certain precautions are necessary. At the first trial of the dental plate the patient should be told to enunciate words which contain labio-dental and linguo-dental sounds such as 'f' and 's.' Careful attention must be paid to the height of the lower dentures. One of the tests suggested by Gillis (1941, 1945, 1951) is to have the patient enunciate the sound 'm' a few times. Correct height of the lower dentures is established when this test is easily executed by the patient, i.e. when he has no trouble in closing his lips. The teeth of the upper denture should be slightly visible when the upper lip is at rest. In smiling, the upper lip should reveal the teeth up to their necks. The sounds 'f' and 'v' should be enunciated with the upper

teeth in slight contact with the lower lip. If this contact is not achieved, the situation must be corrected until the proper enunciation has been established. The proper size of the upper prosthesis is best evaluated by having the patients say words containing the sounds 'l,' 'n,' and 'd.' Whether the tongue exercises too much pressure, or cannot get in contact with the upper plate, can easily be shown and accordingly remedied. If a wearer of artificial dentures whistles the 's' sound, this is an indication that the lower denture is too short. Improvement is obtained as soon as the lower plate is enlarged. If the borderline of the lower denture is too long, the movements of the tongue may became obstructed. The tongue may by its movements displace the plate. In such cases the patient must learn to adjust to the plate with the help of speech exercises. It is advisable to examine the size of the patient's tongue in order to start with dental prosthesis which is adapted to the existing anatomical conditions. *(Excerpta Medica, XIX)*

247. SHERMAN, D., and CULLINAN, W. L., Several procedures for scaling articulation. *J. speech hearing Res.*, 3, 1960, 191-198.

Measures of articulation defectiveness were obtained for 50 one-minute tape-recorded samples of children's speech. Using a nine-point equal-appearing-intervals scale, 14 observers rated consecutive 10-second segments of each sample; a mean scale value was computed for each sample for each observer. An additional 15 observers rated each sample once as a whole. For both procedures measures based upon individual observer responses were satisfactorily reliable. As measured by correlation between group means, results of the two procedures are similar. Results also agree closely with those of a previous experiment by which scale values for the same 50 samples were obtained from observer responses to randomized 10-second segments with no two segments from the same sample presented consecutively. Each of six sets of median scale values for 10-second segments (14 observers) is highly correlated with the set of means of responses to each sample as a whole (15 observers). *(Authors' summary)*

248. TRAPP, E. P., and EVANS, J., Functional articulatory defect and performance on a nonverbal task. *J. speech hearing Dis.*, 25, 1960, 176-180.

The hypothesis tested was that children with mild functional articulatory defects would perform significantly higher on a set of five trials on the Wechsler digit-symbol subtest than children with severe functional articulatory defects. Three groups of matched children, 18 to a group, with a median age of nine, were used: Group MD, representing mild articulatory cases; Group SD, representing severe cases; and Group N, representing a control group of children with normal speech. Level of severity of articulatory defect was determined by the Templin Articulation Screening Test. Group SD scored between six and 35 with a median of 28, and Group MD scored between 40 and 46 with a median of 43. Performances of the three groups were compared both on the first trial and for the combined trials by means of the t test. Group MD scored significantly higher than Group SD on both the first trial and the combined trials ($P < .01$), thus supporting the main hypothesis. Group MD also scored significantly higher than Group N with all trials combined ($P < .01$). The methodological implications of the findings were discussed. *(Authors' summary)*

249. WEAVER, C. H., FURBEE, C., and EVERHART, R. W., Paternal occupational class and articulatory defects in children. *J. speech hearing Dis.*, 25, 1960, 171-175.

The relationship between paternal occupational class and articulatory defectiveness was investigated in 594 first grade children. On the basis of the data, the following statements may be made: (1) Paternal occupational status is significantly related to early speech maturation. More children without dyslalia come from homes in the upper occupational groups, and more children with dyslalia come from homes in the lower occupational group. (2) Only the two lowest occupational classes affect significantly the number of articulatory defects exhibited by children with dyslalia. This conflicts with the reports of Beckey, Irwin, et al. *(Authors' summary)*

XUM

CEREBRAL PALSY

250. BOLES, G., Personality factors in mothers of cerebral palsied children. *Genet. Psychol. Monogr.*, 59, 1959, 159-218.

The purpose of this investigation was to determine whether mothers of cerebral palsied children constituted a special group with respect to personality characteristics as correlates of having given birth to a handicapped child. Hypotheses were . . . mothers of cerebral palsied children are more anxious, guilty, over-protective, rejecting, unrealistic, maritally conflicted, and socially withdrawn than mothers of nonhandicapped children. . . . An experimental group consisting of 60 mothers of cerebral palsied children and a control group consisting of 60 mothers of nonhandicapped children were . . . equated by matched-group procedure on 10 variables. . . . Mothers of cerebral palsied children were found to be significantly more over-protective and maritally conflicted than mothers of nonhandicapped children. Mothers of older children, both of cerebral palsied and nonhandicapped children, were found to be significantly more guilty, rejecting, and unrealistic than mothers of younger children. Mothers of younger cerebral palsied children were found to be significantly more socially withdrawn than mothers of older cerebral palsied children. Catholic mothers in both groups were found to be significantly more guilty, unrealistic, and socially withdrawn than Jewish mothers. Catholic mothers of cerebral palsied children evidenced significantly more retributive guilt and were found to hold significantly more unrealistic expectations for their children's improvement and future life adjustments than Jewish mothers. Jewish mothers were found to provide significantly more social opportunities for their cerebral palsied children than either Catholic or Protestant mothers. Protestant mothers of both groups were found to be significantly less anxious and less socially withdrawn than Catholic and Jewish mothers combined. *(Child Develpmt. Abst. Bibl.)*

251. COURVILLE, C. B., Structural alterations in the cerebellum in cases of cerebral palsy; their relation to residual symptomatology in the ataxic-atonic group. *Los Angeles Neurol. Soc. Bull.*, 24, 1959, 148-165.

Eight cases of cerebellar alterations in a series of 126 cases of cerebral palsy were verified at autopsy; data from five are reported in some detail. An outline of the lesions found in this series of cases is included, with a brief description of the individual changes. Cerebellar symptoms are infrequent and insignificant in contrast to the pyramidal and extrapyramidal manifestations, which may obscure or neutralize any symptoms of cerebellar origin. More attention should be paid to these lesions, the author believes, in view of clinical symptomatology in cerebral palsy before final conclusions can be drawn in regard to their full significance. *(Rehab. Lit.)*

252. HOBERMAN, S. E. and HOBERMAN, M., Speech habilitation in cerebral palsy. *J. speech hearing Dis.*, 25, 1960, 111-123.

A brief description of the speech deviations found in cerebral palsied children is presented. Some of the contributing causes of disturbed speech and language, including neuromuscular deficits, poor feeding habits, and inadequate speech and language stimulation, are discussed. Some habilitation techniques and 'method treatments' now in use at the New York State Rehabilitation Hospital at West Haverstraw, New York, are described and illustrated. Included in these are adaptations of the Bobath 'reflex inhibiting' postures; the Kabat proprioceptive, neuromuscular facilitation techniques; Rood's sensorimotor techniques; general relaxation methods; Jacobson's progressive relaxation; and some of Westlake's techniques and stabilization methods. Perceptive and expressive failures are taken into account and suggestions for dealing with them are given. Feeding problems and methods of handling them are discussed. Means of language stimulation, including choral work, rhymes, jingles, and songs, are reviewed as well as the use of accompanying body activity. The desirability of early evaluation is stressed. A realistic and comprehensive approach to speech habilitation is advocated and clinicians are urged to plan programs that are both satisfying and motivating to the patient. *(Authors' summary)*

XUM

253. IRWIN, O. C., Correct articulation of ten difficult consonants by children with cerebral palsy. *Cerebral Palsy Rev.*, 50, 1960, 6-7, 11.

Data were collected on 333 cerebral palsied children from 3 to 16 years of age to determine articulatory ability on 10 difficult sounds in initial, medial, and final positions in words. Aims of this study were to determine if articulatory ability was related to sex, chronological age, mental age, I.Q., sound position, side of paralysis, medical diagnosis, or degree of involvement. Results indicate that there was no significant difference between males and females. Correlation of chronological age, mental age, and I.Q. were too low for predictive purposes. The best articulatory ability was evidenced in initial consonants followed by medial and final consonants in that order. No significant difference was found between right and left hemiplegics. No significant difference was found between hemiplegics and paraplegics. However, significant differences were found between quadriplegics and hemiplegics, and between quadriplegics and paraplegics. *(M.M.H.)*

254. MARTIN, J. K., Cerebral palsy in Manitoba. *Canad. med. Assn. J.*, Toronto, 82, 1960, 411-417.

A group of 370 children with cerebral palsy seen under the auspices of the Society for Crippled Children and Adults of Manitoba formed the basis for this study. The estimated incidence was 1.56 cerebral palsy children per 1,000 of school age. Of the affected children, some 40% were able to attend normal school and some 30% were in need of special educational facilities. The entire group is categorized into various etiological factors, levels of intellectual impairment, degrees of physical disability, services required, and other aspects of interest to workers in this field. *(J. L. S.)*

Cleft Palate

255. BUCK, M., Velo-pharyngeal movements and tongue carriage during speech in adults with unrepaired incomplete cleft palates. *Cleft Palate Bull.*, 10, 1960, 8-10.

A group of Puerto Rican adults with unrepaired incomplete cleft palates had tongue positions markedly higher and with the high point more posterior than in normal or repaired mouths. Velar activity was minimal, but anterior movement of the posterior pharyngeal wall was greater than for normals or individuals with repaired clefts. There was no evidence that insufficient mouth opening related to nasality. Hearing problems did not differ markedly from findings with individuals with normal structures. *(A.J.B.)*

256. COCCARO, P. J., A serial cephalometric study of the growth of the soft palate in cleft palate children. *Cleft Palate Bull.*, 10, 1960, 8.

Serial lateral cephalometric films of velar length for 57 children with different kinds of palatal clefts were compared with normative data. The children with clefts had shorter soft palates at birth and velar growth pattern paralleled normal. Little effect of palatal surgery was seen. The cleft palate group had shorter than normal horizontal and vertical nasopharyngeal measurements. *(A.J.B.)*

257. COUNIHAN, D. T., Articulation skills of adolescents and adults with cleft palates. *J. speech hearing Dis.*, 25, 1960, 181-187.

The speech of 55 operated cleft palate persons, 13 through 23 years of age, was studied with respect to the correct production of 23 consonant elements and nine consonant blends. The mean age of the cleft palate group was 16.6 years. All types of cleft except isolated cleft lip were included. None of the subjects were judged to have defective intelligence, and the subjects had essentially normal hearing. The sample represented the efforts of more than 15 different surgeons. Percentage scores for correct production were computed for each subject and for each of the sounds tested. The data were arranged to show scores for correct production when errors due to clearly audible nasal emission were included and when they were discounted. The data were analyzed to show: (1) the percentage of sounds tested which were correctly articulated by the cleft palate group, (2) percentages of correct production for each of the 23 consonants and nine consonant blends tested, and (3) a comparison of percentage scores attained by

the cleft palate subjects with the Templin norms. The following conclusions appear warranted: (1) The cleft subjects had marked difficulty with consonant elements. Seventy-one per cent of the consonants tested were correctly articulated. (2) Nasal emission appeared to be a significant factor in the misarticulations of the cleft palate subjects. A substantial number of consonant errors represented sounds correctly articulated but distorted by clearly audible nasal emission. (3) Sounds misarticulated more than 40 per cent of the time were, in order of difficulty, [z], [s], [ʃ], [tʃ], and [dʒ]. Sounds correctly articulated 100 per cent of the time were [j], [h], [w], and [m]. The wide range in correct production which remains when errors due to nasal emission are discounted, suggests that other factors, in addition to velar adequacy, must account for differences in the level of success of the individual consonants. (4) When compared with the Templin norms, the cleft palate subjects were seriously retarded in articulation skills. More than one-half of the subjects presented poorer articulation scores than the average five-year-old normal child. (5) The cleft palate subjects had, on the whole, greater difficulty with consonant blends tested than with the single consonant elements. *(Author's summary)*

258. DOUBEK, F. A., Il significato delle ricerche fonetiche per la chirurgia delle fessure del palato. (Metodi e risultati.) (The significance of phonetic study for the surgical treatment of cleft palate. [Methods and results.]) *Minerva chir.* Torino, 13, 1958, 942-948.

By means of automatic measurements it is possible to read the values of the nasal and oral sonorous pressure of the voice as well as of syllables, words, and phrases, and to determine their pathological value. Using this procedure, special tests have been prepared for establishing the degree of the existing alterations. From a study carried out in patients with cleft palate with the collaboration of surgeon, phoniatrician and teacher of speech, and with the aid of spectrographical sound analysis, it is concluded that a sufficient length and mobility of the restored palatine velum does not suffice to cure an altered voice. When deciding upon surgical treatment and selecting an operative method, the mobility of the musculature of the velopharyngeal sphincter should be considered. An attempt should be made to obtain a very muscular palatine velum, and attention should be given to the correlation between the oral and the nasopharyngeal space. A spacious mesopharynx and a very large buccal cavity (notably the posterior portion) should be avoided. The resonance, which may disturb the voice to such a degree as to become incomprehensible in patients with cleft palate, can be normalized by paying attention to the above mentioned points. *(Excerpta Medica, XIX)*

259. EMERICK, L. L., and NORRIS, T. W., Reactions of some store clerks toward an individual with a cleft palate. *Cleft Palate Bull.*, 10, 1960, 30-33.

A cleft palate adult with noticeable lip scar, missing cuspids, and speech characterized by poor articulation and nasality asked directions of 25 store clerks. The clerks were then interviewed by the authors, first as casual bystanders and then as researchers. The results of 25 questions are reported. There was little negative reaction by the clerks, but a majority felt he would be unfit for employment involv- public contact. Reaction concepts of pity and sympathy were most common. *(A.J.B.)*

260. GOODSTEIN, L. D., MMPI differences between parents of children with cleft palates and parents of physically normal children. *J. speech hearing Res.*, 3, 1960, 31-38.

The Minnesota Multiphasic Personality Inventory was administered to 170 mothers and 157 fathers of children with cleft palates, and results were compared with those of a previously studied control group of parents of physically normal children. The two groups were not different in any important way on the MMPI, nor was the performance of either group different from the expected performance of psychiatrically normal persons. *(J.F.J.)*

261. GOODSTEIN, L. D., Personality test differences in parents of children with cleft palates. *J. speech hearing Res.*, 3, 1960, 39-43.

An attempt was made to relate adjust-

ment of parents of cleft-palate children, as judged from a personality test, to clinical factors including age of the child, type of cleft, rated social adjustment of the child, and parent's adequacy in handling the child. Ratings of parental adjustment were of little help in understanding the parents of children with cleft palates, either on a theoretical level or in making practical decisions about using these parents in the treatment program. *(J.F.J.)*

262. GREENE, M., Speech analysis of 263 cleft palate cases. *J. speech hearing* Dis., 25, 1960, 43-48.

The study reported, done at the Stoke Mandeville Plastic Surgery Clinic in England, divided the subjects into three postoperative groups; (1) having had post alveolar clefts of the soft and hard palate, (2) having had unilateral cleft of lip and alveolus extending as far as the soft palate, and (3) having had bilateral clefts of lip and alveolus extending through the hard and soft palate. Each subject was examined by two speech therapists in order to assess nasopharyngeal competence, articulation, and nasality. Articulation defects were classified as (1) 'nasal articulation,' those defects typical of incompetent nasopharyngeal sphincters and characterized by glottal stops and glossopharyngeal or nasal sibilants, fricatives and affricatives, and (2) 'lateral articulation,' the use of positionally correct consonants produced with lateral depression of the tongue. Assessing 'nasality' (nasal escape and excessive nasal resonance) was difficult because of the absence of objective descriptive procedures. It was noted that no cases were found to have both lateral articulation difficulties and nasal escape, and that tests involving blowing were not reliable indicators of a patient's ability to utilize his nasopharyngeal mechanism for speech. Eighty-six and seven-tenths per cent of the unilateral clefts and 79.5% of the bilateral clefts were found to have normal (nonnasal) speech after initial repair utilizing the Wardill-Kilner V-Y retroposition of the palate. With the use of this procedure, however, the incidence of lateral articulation defects increased in direct proportion to the decrease in nasal articulation. Lateral articulation, which is apparently an increasing cleft palate problem, responds favorably to orthodontic and prosthetic treatment aimed at filling spaces between the teeth and providing better maxillary arch contour. Statistical analysis led to the conclusion that the degree of collapse of the maxillary arch differs between patients who have normal speech and those with lateral articulation. No difference between patients with lateral and normal articulation was found in regard to gaps in occlusion and in the cleft. Pharyngoplastics, when used as secondary surgical procedures, were found not to be very successful when the palate is scarred and immobile, although considerable speech improvement is obtained in most cases with speech therapy following postoperatively. It is interesting to note that in England surgery is relied upon exclusively to correct nasal escape, and that prosthodontic appliances are not made for this purpose. *(S.I.G.)*

263. HAGERTY, R. F., and HILL, M. J., Pharyngeal wall and palatal movement in postoperative cleft palates and normal palates. *J. speech hearing Res.*, 3, 1960, 59-66.

Palatal and pharyngeal movement in 50 subjects with normal palates and 50 subjects with postoperative cleft palates were studied and compared by measurements of tracings from laminagrams of the palatopharyngeal area made while subjects were at rest, phonating [a], and producing [s]. A distinct limitation of activity was noted in the postoperative palates in all important functions. The postoperative cleft group also showed a tendency toward more forward movement of the pharyngeal wall than normals. *(J.F.J.)*

264. KNOBELOCH, C., and BUCK, M., Velo-pharyngeal movements and tongue carriage during speech in adults with unrepaired complete cleft palates. *Cleft Palate Bull.*, 10, 1960, 10.

Twenty Puerto Rican adults with unrepaired complete cleft palates were matched with normally structured individuals. The groups did not differ significantly in structural measurements. Tongue position, velopharyngeal activity, and pharyngeal diameters differed markedly from studies of repaired cases. There appeared to be an inverse relationship between judgments

of excessive nasality and size of cleft opening. *(A.J.B.)*

265. KOBES, H. R., and PRUZANSKY, S., The cleft palate team—historical review. *Amer. J. pub. Hlth.*, 50, 1960, 200-205.

The factors which have occurred historically to produce the present concept of the cleft palate team are discussed. The forming factors which have evolved to influence changes in the care of people with cleft palates are: (1) the concept of the whole child, (2) the study and application of knowledge about growth and development, (3) the inadequacies arising out of the rigid compartmentalization developing in specialty medical practice, and (4) the use of the team to deal with complex medical problems. A review of early cleft palate teams and their part in building the idea of the team approach is presented as is the need for exchange of research and information between professions interested in this group. *(D.A.O.)*

266. K'UNG, F. K., and CHU, H. Y., Harelip and secondary harelip. (Chinese text.) *Chin. J. Surg.*, 6, 1958, 1384.

This paper is limited to a discussion of unilateral harelip only. According to studies in this country and abroad, the incidence of harelip is high, occurring in about one in every 1,000 newborn infants. Therefore, the correction of this congenital deformity should receive great attention in a country possessing a population or more than 600 million people, particularly since the treatment of secondary harelip resulting from improper initial management is not only more difficult but also frequently gives poor results. To obtain satisfactory operative results, first, the anatomy of the normal upper lip and the cleft lip with its coexisting nasal distortion should be fully recognized. Secondly, the inexperienced surgeon should choose a simple but reliable method as his routine until he gets sufficient experience to appreciate the merits of other methods. The authors do not recommend operating when the baby is only a few days old. In order to reduce the operative risk, operation should be delayed 2-6 months after birth when the child is well nourished and developed, and its tolerance to anaesthesia and hemorrhage is increased. The authors used Brown-McDowell's operation as the routine method, but the point 'c' was put on the junction where the lower end of the ridge of the philtrum on the cleft side crossed the mucocutaneous junction, thus forming a 'Cupid's bow' not unlike that produced by Le Mesurier's method. However, the planning of the operation was much simpler and more definite than that of Le Mesurier. In addition, the authors excised an ellipitcal piece of tissue from the vermillion border on the cleft side to symmetrize the whole upper lip. The method of treatment in secondary cleft lip varies with different conditions. Broad or depressed scars can be excised and meticulously sutured if the upper lip is bulky enough. An irregular mucocutaneous junction can be corrected by a 'Z' operation. The authors' modified Brown-McDowell's principle can also be used to correct the notch deformity. If the upper lip, as a result of excessive removal of tissue, is so tight that it falls behind the level of the lower lip, Estlander Abbe's operation is indicated. In the repair of unilateral cleft lip, the authors feel that their results of correction of nasal distortion are still unsatisfactory. *(Excerpta Medica, XIX)*

267. LAW, F. E., Unoperated oral clefts at maturation; 1. Study design and general considerations. *Amer. J. publ. Hlth.*, 49, 1959, 1517-1524.

Findings from a preliminary study of 124 native Puerto Ricans, 59 of whom had untreated clefts of the palate or lip are presented. Of the remainder, 29 had palatal clefts with prior surgical repair and 36 had normal palates and speech. Physical functioning, social adjustment, and emotional health of those with untreated clefts were compared with persons who had received treatment. Those not operated on were found to have developed well and to have followed the normal pattern of facial growth. Adaptation to speech difficulties was rather good. In most respects the untreated cases appeared to present fewer problems than the treated cases. Additional areas for research are suggested. *(Rehab. Lit.)*

268. LEFEVRE, M. C., Language problems of the child with cerebral palsy.

Monogr. Soc. Res. Child Develpmt., 25, 1960, 59-69.

The author makes the point at the outset of her discussion that when faced with a child with cerebral palsy there is not the problem of establishing the presence of brain damage. Consideration is then given two groups of children with cerebral palsy, (1) those who need the services of a speech therapist and (2) those who do not need this service. A very important point is made to therapists viz. that it solves no problem for parents when they are told their child has been diagnosed as having 'delayed speech.' The real problem is what can be done for the child. The author then shows how she attempted to select a series of representative items for a rough scale of speech development. Her procedure was empiric. Six items per six months were selected to represent development. Examples from each of the intervals are: 0-6 mos.—finishes nursing or bottle in 20 minutes; 6-12 mos.—drinks from cup; 12-18 mos.—chews meat; 18-24 mos.—enjoys eating skills, biting meat from bones, etc.; 24-30 mos.—eats breakfast and lunch with no significant modification of family meals; 30-36 mos.—require no substantial adjustment in diet, except for such items as having meat cut for him and rich desserts limited to token servings. The items (which are 36 in all) are used in this way, viz., that a baby who experiences difficulty in sucking and swallowing is one who will have speech difficulties later in development. Item 1 (finishes nursing or bottle in 20 minutes) serves to identify this problem. The author makes the point that many children delayed in speech and language development are still eating soft foods. Item 13 (chews meat) furnishes information relative to chewing activities. Each of the items in the test has implications relative to the adequacy of speech development. With cerebral palsied children the problem is in providing the optimum conditions for learning. Parents sometimes feel that if only the child could talk everything would be alright. The author also discusses children that have begun to talk but suffer from dysarthria. This condition sometimes obscures language development that is taking place. Sometimes great effort is made to teach the dysarthric to talk only to find out that there is not much to be said because of basic problems in learning. Visual and auditory perceptual problems sometimes add to the difficulty the cerebral palsied child has. Distractibility, perseveration, echolalia, forced responsiveness, and inability to separate figure from ground are factors influencing language development of the child with cerebral palsy. Cerebral palsied children need real help in organizing their language responses. This approach might seem too direct but one of their basic problems is that of integration. Materials and experiences must be brought to the child who is cerebral palsied because of his restricted mobility. These should contribute toward development of hand, finger, and eye coordination. Continued development of language through avenues of reading and writing, is suggested by the author. *(H.J.O.)*

269. LONGACRE, J. J., DESTEFANO, G. A., DAVIDSON, D. A., and HOLMSTRAND, K., The role of the posterior pharyngeal flap in the rehabilitation of the cleft palate cripple. *Cleft Palate Bull.*, 10, 1960, 4-6.

In a well integrated cleft palate rehabilitation clinic, the need for each professional specialty is indicated by a careful study of each patient. The lip cleft is closed in the first few months to allow more nearly normal molding of maxilla and premaxilla by facial and tongue musculature. Complete palatal clefts are repaired with a V-Y lengthening closure at optimal time, which has varied from three to five years of age, resulting in less interference with growth. The posterior pharyngeal flap operation has been used for conditions of palatal paralysis (2 cases), submucous cleft (2 cases), congenital palatal foreshortening (3 cases), and palates scarred and shortened following repair (72 cases). There was marked speech improvement among 13 pre-school age patients with this operation followed by speech therapy. The 34 secondary school patients needed little speech training after surgery. The operation was important for emotional and vocational rehabilition of five older patients with insufficient teeth to retain their prostheses. Detachment of flap occurred only in two early patients. Post-surgical examinations show scarred and firm

palates become pliant and mobile due to improved vascularization and possible nerve regeneration. Usually sufficient length is obtained with a posterior flap based above. Technic and postoperative care is described. Rarely, a retropositioning procedure or extra-oral tissue has been used. Flaps are made wide and raw areas are epithelialized, which generally prevents tubing. *(A.J.B.)*

270. LORENZ, W., Gaumenspalten und hals-nasen-ohrenerkrankungen. (Cleft palate and its relation to ear, nose, and throat diseases.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 513-523.

One hundred two cases of cleft palate are discussed regarding their anatomical and pathological changes. It is emphasized that speech defects and deafness are the common complications of a cleft palate and therefore an early cooperation between a maxillary surgeon and an ENT-specialist is indicated. The problem of an early operation, as advised by many surgeons, is discussed. The author does not believe that from the otologist's point of view an early operation is indicated. *(Excerpta Medica, XI)*

271. MASSON, J. K., and BOWEN, R. Jr., Closure of a wide cleft palate in an adult by means of a tube flap. *Proc. staff Meetings Mayo Clin.*, 35, 1960, 11-14.

A congenital cleft of the hard and soft palate in an adult was closed satisfactorily with an acromiopectoral tube flap brought in beneath the mandible and through the floor of the mouth. Speech was improved. *(Authors' summary)*

272. McWILLIAMS, B. J., Speech therapy for cleft-palate patients. *Speech Pathol. Ther.*, London, 2, 1959, 3-7.

The author has conducted an excellent clinical study of the speech intelligibility of 48 adults with cleft palates. Distinct evidence was found to suggest that articulation skill and perceived nasality are closely related, and that both correlate highly with speech intelligibility. For years, the basic goal in speech therapy for cleft palate patients has been velar-pharyngeal closure. The author feels that this tradition has been overemphasized, and that speech therapy might well begin with direct attention to the disorders of articulation. *(Excerpta Medica, XI)*

273. MESTRE, J., and SUBTELNY, J. D., A comparative cephalometric analysis of untreated cleft palate adults and normal adults. *Cleft Palate Bull.*, 10, 1960, 7-8.

Puerto Rican adults with no clefts (30), untreated unilateral clefts (29) and posterior clefts (28) were studied by lateral cephalometric roentgenographs. Findings suggest there is similarity in antero-posterior and vertical dimensions of maxilla and mandible for normals and untreated adults, similar positioning for the jaws in both groups, and relatively normal skeletal dimensions for the untreated cleft palate individuals. *(A.J.B.)*

274. NOMENCLATURE COMMITTEE of AACPR., Proposed morphological classification of congenital cleft lip and cleft palate. *Cleft Palate Bull.*, 10, 1960, 11-16.

The objectives of the new classification are presented. The basic plan divides maxillary clefts into Clefts of Prepalate (with subheadings of *lip* and *alveolar process*) and Clefts of Palate (with subheadings of *soft palate* and *hard palate*). The classification is in outline form, providing for specification of location, width of cleft, and modifications such as submucous clefts, velar length, vomer attachment, etc. Twenty line drawings illustrate specific examples. There is a list of other facial clefts. *(A.J.B.)*

275. OBERNIEDERMAYR, A., Le Mesurier's operation for harelip. *Arch. Dis. Childh.*, London, 35, 1960, 103-107.

The author describes in detail this method which has been used in the Children's Hospital in Munich. Le Mesurier's procedure, with modifications where necessary, has been employed in the hospital since 1955. During this period 238 operations were performed. The article is illustrated with pictures and diagrams. *(J.L.S.)*

Delayed Speech

276. LEWIS, S. R., and VAN FERNEY, S., Early recognition of infantile autism. *J. Pediat.* 56, 1960, 510-512.

The case history of a two-year-old female is cited. Descriptions of behavior are given. Diagnosis of early infantile autism is supported by subsequent development of the typical syndrome by two years of age.

The most interesting feature of the case is reversal of abnormal behavior when the child was separated from the mother and given active stimulation. Early detection is advocated along with the need to alert parents to young childrens' need for warm human relationships. *(N.J.C.)*

277. LOOMIS, E. A., Jr., Autistic and symbiotic syndromes in children. *Monogr. Soc. Res. Child Develpmt*, 25, 1960, 39-48.

The author suggests that one approach to psychiatric evaluation of children is to determine the sort of messages children have to send and also the kind they receive. How the messages are handled and also how they are reflected in their speech and in non-speech behavior is of value. Further, a child's behavior toward persons and things and his own body is important. The author divides his discussion into four topics: (1) infantile autism, (2) pathological symbiosis, (3) speech of autistic and symbiotic children, and (4) treatment. The first, infantile autism, is discussed in terms of a four-year-old boy treated by the author. In his discussion of pathological symbiosis, Loomis points out that the Mahler classification and autism are not mutually exclusive. He points out that all persons tend toward autism or symbiosis to some degree in that from birth on we tend to move toward being a separate self. At first this is physiological in nature and later psychological. Pathological symbiosis, however, is abnormal movement from others. The author states that at about six to eight months of life the normal child and the mother both start to move toward greater autonomy. With the child showing abnormal symbiosis there is no natural breaking away from mother. He is still being fed at one and one-half years of age. To separate him from mother causes either panic or extreme hostility on the part of the parent toward the child. Loomis states that most common breakdowns in children under age ten years are before the second birthday with the autistic or between two and one-half and four with the symbiotic. In autistic children two types of speech are seen; no speech, or precocious, noncommunicative use of language. They confuse who they are, with who you are (pronomial reversal). A delayed echolalia is also evident. They may read very early and far beyond their years. With symbiotics there is quite normal speech until the break with mother occurs and then there is almost a mutism. When speech returns it is often a form of baby talk. The play of the symbiotic and autistic child differs. Autistic youngsters play with fragments of things like hair, down, etc. Symbiotic children assume a mother role and play with egg beaters, carpet sweeper, etc. Twenty to twenty-five percent of both types will learn to read before speaking. They are observed as talking but not communicating. They are not silent. More and more both types of children are treated in their own homes as the parents can be helped to perform some of the therapy. Parents and child might both receive individual therapy. The child may go to nursery school and receive help in speech development. The author suggests in closing that much patience is needed in working with these children and that ways must be found to get through to them. The therapy must stem from coordinated efforts of a number of disciplines. *(H.J.O.)*

Diagnosis and Appraisal

278. FLETCHER, S. G., SHELTON, R. L., Jr., SMITH, C. C., and BOSMA, J. F., Radiography in speech pathology. *J. speech hearing Dis.*, 25, 1960, 135-144.

In this paper the training of the radiologist, the potential contribution of the radiologist and radiologic facility to speech pathology, and the professional relationship between the two fields are discussed. A brief description is given of the principal items of radiographic equipment and of their availability, utilization, and limitations. Some current and potential applications of radiology in speech are listed and described. *(Authors' summary)*

279. LUBIC, L. G., A neurologist discusses the evaluation of a nonverbal child. *Monogr. Soc. Res. Child Develpmt*, 25, 1960, 35-38.

The author begins his discussion by defining the function of the neurologist and states that this medical specialist is concerned in the main with organic diseases of the brain, spinal cord, or peripheral nerves. The neurologist, when dealing with

children who are retarded in language, determines the presence or absence of organic disease of the C.N.S. His tools are the case history, neurological examination, electroencephalogram, and skull x-rays. History involves determination of antenatal, natal, or postnatal problems that might be of etiological importance. Health of mother, duration of pregnancy, conditions at time of delivery, and all other factors that might result in brain damage must be explored. History of convulsions is very important as well as information relative to infections, trauma, or other noxious agents which could have caused damage. Developmental factors are important, particularly age of holding up the head, standing, sitting, and walking. The author points out that, in the main, mentally retarded children start slowly and continue slowly and that autistic children progress to a point and then regress or remain on a plateau whereas those having encephalitis or central nervous system trauma progress normally up to the onset of the disease. After history-taking the neurological examination is administered which involves tests of speech, gait and station, cranial nerves, motor function, sensory function, cerebellum, and reflexes. Many children, because of lack of cooperation provide only fragmentary information and therefore repeated efforts must be made to diagnose. The author points out that most children with speech problems examined by the neurologist are routinely given skull x-rays. Electroencephalography is employed but findings must be evaluated in light of the entire clinical picture. It is difficult to use it for making a specific diagnosis. Rarely does the author examine the spinal fluid in nonverbal children. The pneumoencephalographic examination which is used for determining tumors and cerebral trophy is rarely indicated for the nonverbal child. The author makes the point that the neurologist can be of real assistance in diagnosing the causative factors in speech and language delay if his limitations are understood. *(H.J.O.)*

280. McCARTHY, J. J., A test for the identification of defects in language usage among young cerebral palsied children. *Cerebral Palsy Rev.*, 50, 1960, 3-5.

In order to test language usage in children from ages 3 to 9, the author plans to apply Osgood's formulations on language in which the synthesis of language ability consists of combinations of processes, levels, and channels. By constructing separate items to evaluate combinations of processes, levels, and channels, a battery of 9 sub-tests will be constructed. Previous studies using the original experimental test suggest the possibility of differentiating and testing single language abilities. Further differentiation of test items is necessary, however, in order to evaluate each language ability. The author suggests that the resultant test profile will be helpful in planning language therapy. *(M.M.H.)*

281. MERCER, R. D., Organic brain syndromes and speech disorders in children. *Monogr. Soc. Res. Child Develpmt*, 25, 1960, 25-34.

The author discusses organic abnormalities of the brain thought to be most important in faulty speech development. Abnormalities are classified as brain injuries, developmental anomalies, metabolic errors, and endocrine abnormalities. Subtle brain damage which is related to language disorders is also discussed. Brain injury is broadly defined as any acquired disorder that produces anatomic defects of brain tissue. The author follows the conventional temporal classification of antenatal, natal, and postnatal periods. Diseases that most frequently endanger a mother's health and may damage the brain of a fetus are hypertension, toxemia of pregnancy, diabetes, and syphilis. During early months of pregnancy viral diseases may have damaging effects on the fetus also. German measles, toxoplasmosis, and giant cell inclusion disease are some of the more devastating. Chicken pox, mumps, the common cold, and influenza are suspected as contributors to fetal brain damage. Excessive accumulation of amniotic fluid, hyperemesis, and bleeding during the early months of pregnancy all seem related to births of infants characterized by abnormality. The author states that the most important factor in the natal period is birth injury. Prolonged labor due to cephalopelvic disproportion is a contributing source of injury as are precipitous delivery and premature delivery.

The author feels that placental abnormalities are of greatest importance as they interfere with an adequate supply of oxygen. Abnormalities of the umbilical cord can also be damaging because of lessened blood supply. Breech delivery and Caesarean section delivery also seem to be related to a higher incidence of brain damage than do normal deliveries. Holding back normal delivery in order to wait for the physician's arrival has been known to produce brain damage. As regards postnatal damage, jaundice and Rh incompatibility causing destruction of red blood cells are important. Jaundice from other causes may also cause destruction of red blood cells and subsequent brain damage. Brain infection or trauma, viral inflammation of the brain itself, as well as whooping cough may result in brain damage. Symptoms that suggest brain damage in the neonate are difficulty in breathing, sucking, and swallowing. Unusual fretfulness, forceful vomiting, hyperactivity as well as too little activity may also be symptoms. The author stresses the most obvious signs of brain damage. The most common type is spasticity characterized by unusual tightness of the muscles of the extremities usually due to injury of the cerebral motor cortex. Toe walking is sometimes observed due to tight heel cords. Deep tendon reflexes are exaggerated and adductor muscles may be so tight as to cause dislocation of hips. Second in incidence is athetosis, caused by damage to the basal nuclei. Poor coordination of muscles is apparent and speech is often difficult. Some additional signs of brain damage are failure to grow or excessive obesity. Mental retardation and epilepsy usually stem from brain damage. Organic hyperkinesia as well as short attention span, rapid changes of moods and repetitive motor patterns may all suggest brain damage. The author makes the point that among the children with language disorders there is a small group about whom little is known. These are the children that show defects in symbolic learning although all of the possible etiologic factors known have been ruled out. *(H.J.O.)*

282. SCHILLING, A., and KRUEGER, W., Untersuchungen ueber die motorik sprachgestorter kinder. (Examination of motor proficiency of speech-disturbed children.) *H. N. O.*, Berlin, 8, 1960, 205-209.

The psychologic and speech development of the child are connected with the normal motor proficiency of the respective age. In later years the parallelism of intelligence and motor proficiency may become less evident. A motor deficiency is a diagnostic hint for the existence of brain damage provided that other neurologic tests verify that damage. The writers use the test of Oseretzky and Goellnitz as done earlier by Luchsinger. The writers examined 100 stutterers and 1000 dyslalics. The results show that in speech disturbances, not only in stutterers and certain forms of dyslalics, but also in cases of retarded speech development, undiscovered organic deviations of the central nervous system in childhood are of causal significance. *(E.F.)*

LARYNGECTOMY

283. JANOWSKI, W., KANIOWSKI, T., and RECZEK, H., Radiologickzne obrazy gardla dolnego u bezkrtaniowców. (The x-ray picture of the hypopharynx in laryngectomized patients.) *Pol. Przegl. Radiol.*, 23, 1959, 15-18.

Laryngectomy was performed on 16 patients in the last several years; in no case was the hyoid bone removed. Normal and contrast radiography was employed. The radiological picture revealed a small hypopharynx in some cases, a moderately large one in others and in the remainder a very large hypopharynx opening up into oesophageal ostium. In early stages when phonation was started, the hypopharynx presented a large air space. During the barium examination the anterior pharyngeal wall was well visible. Some irregularities of contour and bulging air pockets could be seen. These pockets may simulate the epiglottic valleculae. In the majority of cases the barium passage was free but delayed. In cases with a more rigid anterior pharyngeal wall, the distance between the posterior pharyngeal wall and the vertebral bodies was increased. *(Excerpta Medica, XI)*

284. MALBECK, E., and SCHLOSSHAUER, B., Phoniatrische nachuntersuchungen chordektomierter patienten. (Phoniatric examinations of cordectomized patients.) *H. N. O.*, Berlin, 8, 1960, 201-205.

Classical cordectomy restricts itself to the vocal cords and preserves as far as possible the lower parts of the laryngeal muscles. The other method of operating does not preserve these parts. Patients who had undergone the classical operation were compared with those operated on in the more radical way. The following items were examined: range, average pitch of the speaking voice, the kind of start, and the duration of tone. The patients were asked to sing the vowel [o] in middle pitch and to raise the pitch suddenly. Stroboscopy was performed with Timke's apparatus. Findings were: a) bilateral regular vibrations, b) reduced amplitude of vibration on the operated side, c) no vibration of the cord on the operated side, d) regular vibrations on both sides, e) irregular vibrations on the nonoperative side with no vibrations on the operated side, f) vibrations of the false cords on the operated side, g) vibrations of the false cords on the nonoperated side and no vibrations of the cord on the operated side, h) bilateral vibration of the false cords, and i) bilateral vibrations of the aryepiglottic folds. There is no relationship between the kind of voice disturbance and the age of the patient, nor between the kind of operation and the degree of voice trouble. Grouping of the voice disorders was done during ordinary conversation, since during stroboscopy unphysiological conditions obtain. Most of the patients used false-cord voice. Normal voice is not to be expected after either operation. Range is reduced about one octave, and duration of tone is shortened. Of greatest importance is the intention of the patient to again produce voice and in this he should be helped by systematic voice education. *(E.F.)*

285. ORESCOVIC, M., La voix après cordectomie. (The voice after cordectomy.) *Rev. Laryngol. Otol., Rhinol.*, Bordeaux, 80, 1959, 301-317.

In partial unilateral cordectomies, a fold of connective tissue is formed to replace the resected cord. The ventricular fold of the ipsilateral side becomes hypertrophied. In total unilateral cordectomy, the ventricular folds cover the glottis and the ventricle disappears. The healthy cord enters into vibration with the ventricular fold of the contralateral side, 'ventriculocordal voice.' In bilateral cordectomies the two ventricular folds touch in the median line. By stroboscopy absence of vibration on the side operated on is observed. The ventricular folds vibrate in vertical direction. The cord not operated upon vibrates in horizontal direction. The hypertrophy of the folds is produced by the m. thyreo-arytenoideus descendens and not by the m. stylopharyngeus, as is said by Rethi. *(Excerpta Medica, XI)*

286. SAKU, Y., Statistical observation and frequency analysis studies of artificial larynges. (Japanese text.) *Otol. Fukuoka*, Fukuoka, 5, 1959, 101-116.

Of 72 patients who were subjected to laryngectomy in the department of otorhinolaryngology of Kyushu University, 67 used artificial larynges. The speech of these patients was studied subjectively and with a frequency analyzer. Twenty-five of the 67 cases had intelligible speech and suffered no inconvenience in everyday life; eleven cases had unintelligible speech. Many of the cases became proficient in the use of the artificial larynx within five days, and the majority became proficient within 10 days. By means of a frequency analyzer, comparative studies were made of normal speech and speech produced with the artificial larynx. These showed reduction in the overtones in the speech from the artificial larynx, as well as indistinctness of the formants. The author believes this may be one of the reasons that voice with the artificial larynx is not clear and sounds like a monotone. He examined the variations in the voice produced by changing the component parts of the artificial larynx. The examination revealed that the overtones in the high frequency range increased when the length of the connecting tube was increased. It also revealed that the overtones increased when the tension of the rubber membrane was small and when the hole in the voice box was large. *(S.P.Q.)*

287. SNIDECOR, J. C., and CURRY, E. T., How effectively can the laryngectomee expect to speak? Norms for effective esophageal speech. *Laryngoscope*, 70, 1960, 62-67.

The speech of six superior esophageal

speakers is analyzed to determine 'suitable and attainable' goals for other laryngectomees. This speech is evaluated with respect to: (1) number of words [ave. 5] and syllables spoken per charge of air, (2) time required to gulp a charge of air [about one-half second], (3) number of words per minute [ave. 113], (4) the pitch level [about an octave lower than normal], and (5) pitch fluctuations [greater range of tones than normal]. *(R.G.)*

288. **STORCHI, O. F., and MICHELI-PELLEGRINI, V., A proposito dell'innervazione ricorrenziale del muscolo cricofaringeo e della sua importanza nella fonazione dei laringoctomizzati.** (The innervation of the cricopharyngeus muscle by the recurrent nerve and its relation with phonation in laryngectomized persons.) *Bell. Mal. Orecch.*, 77, 1959, 110-121.

After a short literature review on recurrent innervation of the cricopharyngeus muscle, the authors relate the results of 32 recurrent dissections. In 91% of cases the authors found thin nervous branches (one to five) originating from the extralaryngeal branch of the recurrent nerve which are directed to the cricopharyngeus sphincter. It has been impossible to solve the question whether these branches are of sensory or motor type; they appear to be of the latter type. When recurrent innervation of the cricopharyngeus muscles is prevalent, the difficulty in phonation of the laryngectomized patient can be in correlation to recurrent operative damage during the total laryngectomy. *(Excerpta Medica, XI)*

289. **VAN DEN BERG, J., and MOOLENAAR-BIJL, A. J., Crico-pharyngeal sphincter, pitch, intensity, and fluency in esophageal speech.** *Pract. Oto-Rhino-Laryngol.*, Basel, 21, 1959, 298-315.

The problems of esophageal speech are discussed by comparing the properties of the substitute organs with those of the organs normally used for voice production. The properties of the crico-pharyngeal sphincter, or what is left of it, are shown to be very important. Essentially, the patient has to learn to suppress a normal reflex pattern and to adapt a new one. An anatomical or functional spasm makes esophageal speech impossible and asks for treatment by the physician. A low or moderate tightness at complete relaxation and a well defined sphincter are favorable. The pseudolarynx has the disadvantage of having only one muscle, no dilator muscles, no compensatory muscles. Lack of a well defined structure which can serve as a pseudolarynx is unfavorable for esophageal speech of high quality. Pitch and intensity are shown to be correlated. A low pitch goes with a weak sound and small air consumption, a high pitch with a strong sound and large air consumption. The problems of fluency are discussed, starting with the consequences of the small capacity of the new bellows compared with the large capacity of the former bellows. It is essential that the patient realizes his physiological limits. The inhalation method and the injection method are discussed. The injection method is shown to permit fluent and comparatively loud speech, with practically no noise from the tracheostoma, and to offer the great advantage of not interfering with the vital functions of the lungs when the patient respects his physiological limits by avoiding heavy efforts in speaking. *(Excerpta Medica, XI)*

Stuttering

290. **BLUEMEL, C. S., Concepts of stammering: a century in review.** *J. speech hearing Dis.*, 25, 1960, 24-32.

After commenting briefly on early concepts of causation of stuttering (vegetative and speech muscle integration, and tongue carriage theories), the author discusses the more modern cerebral dominance and diagnosogenic theories. Utilizing the term stammering, which he feels implies a broader clinical concept that stuttering, which connotes to him an oral speech disturbance only, he suggests that the problem is best understood as a psychoneurosis, or disorganization of function resulting from stress. The stammerer is seen as a nonintegrated person who is especially disorganized in speech. The author recognizes primary stammering–speech block arising from emotional stress, and secondary stammering –consisting of the stammerer's personal reaction to his speech predicament and the symptoms consequent to this speech anxiety. Therapeutic comments are generally unfavorable toward negative practice, and

somewhat more positive toward relaxation when it is used to obtain speech composure and tranquility. Clear verbal thinking is emphasized. Preschool therapy and daily preventive group programs aimed at organizing the child's speech so that he can withstand stress are suggested. *(S.I.G.)*

291. BURR, H. G., and MULLENDORE, J. M., Recent investigations on tranquilizers and stuttering. *J. speech hearing Dis.*, 25, 1960, 33-37.

In summarizing the experimental studies assessing the effects of certain tranquilizing drugs on stuttering, the authors conclude that such drugs might be useful tools in the long-range therapeutic procedure. Although various subjects responded differently to different drugs, it was felt that tranquilizers may help to reduce stuttering symptoms and to render the subjects less susceptible to the sharp emotional impact of the speech situation. Large scale study is recommended before tranquilizers are routinely utilized in therapy programs. *(S.I.G.)*

292. EMERICK, L. L., Extensional definition and attitude toward stuttering. *J. speech hearing Res.*, 3, 1960, 181-186.

The purpose of this study was to test the relationship between attitude toward stuttering and countings of stuttering. Subjects, 148 elementary school teachers, counted stutterings on a tape-recorded passage of speech and reacted to a test of attitude toward stuttering. On the basis of the findings of this study, within the limitations of the experimental conditions and recognizing the questionable validity and reliability of the attitude scale, the following conclusions are drawn: (a) More tolerant attitudes toward stuttering are accompanied by higher countings of stutterings. (b) Training in speech correction has an ameliorative effect upon attitude toward stuttering. Such training tends also to sensitize a listener to moments of stuttering. (c) Attitude toward stuttering and countings of moments of stuttering are not dependent in any important way upon marital status, parental status, age of the subjects' children, grade level taught, and career plans. *(Author's summary)*

293. JOHNSON, W., The six men and the stuttering. *ETC.: Rev. gen. Semant.*, 16, 1959, 419-433.

This is a slightly modified reprint of Johnson's introduction to *Stuttering: A Symposium*, edited by Jon Eisenson (New York: Harper, 1958). An effort is made to explain, from a 'general semantics' point of view, why the six persons contributing to the *Symposium* have arrived at different conclusions about stuttering. The article is written broadly enough to apply to disagreements in other areas. The possibility that the varied viewpoints of the six investigators can be accounted for on the basis of their incomplete or inadequate knowledge of the subject is rejected. Instead, the disagreements are considered to be affected considerably by the use of different types of statements about stuttering. Johnson divides all of the theories into two main types: (1) the *Speech* theories, which center on the speech and the speaker and the (2) *Interaction* theories which involve a relationship between the speaker and the listener. Certain misuses of language appear to engender rather than decrease disagreement. Two of these are: (1) the tendency to use words such as 'stuttering' as nouns when they probably should be used as verbs; and (2) the use of different levels of description. *(H.L.L.)*

294. JOHNSON, W., BOEHMLER, R. M., DAHLSTROM, W. G., DARLEY, F. L., GOODSTEIN, L. D., KOOLS, J. A., NEELLEY, J. N., PRATHER, W. F., SHERMAN, D., THURMAN, C. G., TROTTER, W. D., WILLIAMS, D., and YOUNG, M. A., The onset of stuttering. Research findings and implications. Univ. of Minnesota Press: 1959, 243 pages.

The book reports on research conducted by the speech pathology center at the State University of Iowa. The studies were undertaken in an effort to answer the basic question: in what form, at what age, and under what conditions does the problem of stuttering arise? For the investigations, which were carried on between the years 1934 and 1957 approximately 500 children and their parents were studied. Half the children were classified as stutterers, the other half as non-stutterers. The authors come to the conclusion that children who

come to be regarded as stutterers are essentially normal physically and emotionally and that in most cases treated in early childhood, primarily through counseling of parents, the problem can be arrested and eliminated. The important differences observed between the groups of stutterers and non-stutterers were in the parental attitudes and practices by which the children, as speakers, were affected. Thus it was found that the parents of stutterers were more demanding regarding the fluency of their children's speech, that they were more dissatisfied with their children and with each other, had higher standards of child development and seemed to think, feel, and behave in ways calculated to make for tension in the home. The data indicate that by virtue of this interaction the child tended to acquire from his parents and other important listeners the sort of perpetual and evaluative reaction to his own speech behavior, and to himself as a speaker, which served to inhibit and disrupt his speech reactions in various forms and in varying degrees. *(Excerpta Medica, XI)*

295. LEUTENEGGER, R., What we have learned about stuttering in the past twenty-five years. *Speech Teacher*, 9, 1960, 23-30.

Several of the recent studies and concepts pertaining to stuttering etiology are presented. The author points out the vast differences among researchers in just defining the term 'stuttering' and concludes by asking whether we should not 'perhaps continue to explore the idea of different kinds of stuttering' or think in terms of 'problems of stuttering behaviors.' *(E.H.N.)*

296. MYSAK, E. D., Servo theory and stuttering. *J. speech hearing Dis.*, 25, 1960, 188-195.

From the standpoint of the oral language mechanism as an *open* and *closed cycle* servosystem, stuttering was viewed as a condition of *verbalizing deautomaticity*. *Deautomaticity* was seen as the possible result of disturbances in reflexive and automatic mechanisms in various parts of the *total linguistic circuitry*. Some of these concepts were related to the ideas of different authorities in the field of stuttering theory. The paper concluded with a brief description of a few preliminary techniques based on principles of servo theory. *(Author's summary)*

297. PETERS, R. W., and SIMONSON, W. E., Generalization of stuttering behavior through associative learning. *J. speech hearing Res.*, 3, 1960, 9-14.

The generalization of stuttering behavior within an associative-learning model was evaluated. Ten stutterers learned words of low stuttering potential in association with words of high and low stuttering potential. Results support the prediction that stuttering behavior generalizes through associative learning. *(J.F.J.)*

298. SCHILLING, A., and BIENER, W., Messung der vibrationsempfindung mittels audiometer und ergebnisse dieser untersuchung bei stotterern. (Measurement of the perception of vibration by means of an audiometer and results of this study in stutterers.) *Nervenarzt*, 30, 1959, 279-281.

Audiometers are suitable for frequency generators in the measurement of the threshold of vibration perception. In comparison with tuning-forks the use of audiometers is more accurate. The amplitude of the vibrations is constant and may be controlled in steps; the same is true for the frequency. Calibration in decibels permits a comparative measurement of the vibratory threshold. In the extremities of 26 out of 112 stutterers examined with this method appreciable differences were found between the thresholds at the two sides of the body. In the control group of 56 healthy subjects of the same age only 2 showed such a difference. It is not explained whether and in how far this finding may be considered a diagnostic indication of an organic central disturbance. *(Excerpta Medica, XI)*

299. WILLMORE, L., The adult stammerer. *Practitioner*, 184, 1960, 621-625.

The author briefly summarizes the concept advanced by Wolberg that stammering stems 'partly from an undefined constitutional factor that renders the speech apparatus vulnerable to homeostatic imbalance, and partly from a personality disorder which involves the individual's capacity to assert himself—to express his needs in relation to others.' With respect to the adult, the value of 'suggestion' and the use of

drugs for treatment of stammering are mentioned. The author concludes there is no simple answer to the problem of stammering. *(J.L.S.)*

300. WOOLF, M., Zur frage der genese und entwicklung des stotterns. (Genesis and development of stuttering.) *Psychotherapie*, 2, 1957, 235-241.

Because a stuttering patient expresses himself with great difficulty, it is seldom possible to reveal the origin of stuttering by psycho-analysis. In the present paper, a case is described in which such analysis was facilitated by the fact that stuttering had spontaneously diminished, making place for other neurotic symptoms necessitating psycho-analytic treatment. The patient had spoken well at the age of 4 years and he had been praised for it especially by his mother. Proud of his achievement, he took great pleasure in speaking. His father and sister being also fine speakers, the family made it a sport to pronounce difficult sentences well and rapidly. The patient exercised this jealously and noticed an agreeable feeling in his mouth when pronouncing difficult words. In research of his lust, he modulated his speech, spoke less clearly and began to stutter, which he did not mind. Having developed a hostile attitude to his parents in reaction to a withdrawal of love on the part of his mother, he took positive pleasure in stuttering on having noticed that this caused anxiety to her. In this case, the patient's oppositional attitude to his parents was the chief cause of stuttering. The author cites another case in which this mechanism was found, as well as the relation between stuttering and a high ability for speech. *(Excerpta Medica, XIX)*

Voice Disorders

301. BREWER, D. W., and BRIESS, F. B., Voice problems. *Medical Times*, 88, 1960, 461-464.

The role of the general physician in the detection and management of voice problems is discussed. Responsibility for the detection of the specific causes of voice problems is felt to be that of the general practitioner. Many new symptoms seldom previously identified with vocal abuse are listed. The role of the laryngologist in performing additional laryngoscopy, biopsy, and cell studies is outlined. The article stresses the need for association with a laryngologist and highly competent voice diagnostician. A four step diagnostic procedure to be followed by the voice diagnostician is outlined. The combined approach of the three specialists is felt to be the ideal approach to handling voice problems. *(D.A.O.)*

302. CAMINO, S. T., Semiologia de la voz. (An analysis of the elements of voice production and voice quality.) *Acta audiol. foniat. Hispano-Amer.*, Mexico City, 1, 1959, 161-176.

The author presents an analysis of the components of human voices and underlines the importance of auditory reception and proprioceptive control for the acquisition of the acoustic-phonic automatism. In reference to the various components of the phono-articulator system, the term ELEMENTS is introduced. The most popular classifications of voices are enumerated as well as the several explorations necessary towards their correct classification. The auditory qualities of the several voice defects are exposed. The need the laryngophoniatrist has of recognizing voice qualities and the LISTENING of them, is emphasized in a very special way, since the auditory appreciation of vocal effort is of great importance and unfortunately often underestimated. *(Author's summary)*

303. CORBETT, C. C., Syndrome of Avellis. *J. Laryngol. Otol.*, London, 74, 1960, 32-36.

The nature and etiology of Avellis' syndrome is reviewed. A case is reported of a middle-aged female complaining of sudden dysphagia and alteration of voice. Attention is drawn to the onset of velar paralysis after that of the pharynx and larynx. *(C.L.)*

304. CORNUT, G., Etude comparative de la mécanique externe de l'appareil respiratoire chez des sujets normauz et chez des sujets dysphoniques. (A comparative study of the external mechanism of the respiratory apparatus in normal and in dysphonic subjects.) *J. Fr. Oto-Rhino-Laryngol.*, Lyon, 8, 1959, 125-134.

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The present study led to the conclusion that in all cases of functional dysphonia cor-

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rection of the defective respiratory movements must be the first act in vocal re-education; even when the respiratory deficiency has not been the initial cause of the dysphonia. It is necessary that respiration should be harmoniously equilibrated, utilizing both the possibilities of diaphragmatic mobilization and those of costal mobilization. Another condition is that these movements adapt their suppleness to the changes in frequency, intensity, and duration of the sounds. The respiratory movements in question must not impede laryngeal function. For this reason the utilization of the abdominal muscles is recommended for all pronounced expiratory efforts, which can work more easily independently from the laryngeal and perilaryngeal muscles. *(Excerpta Medica, XI)*

305. HOLINGER, P., and JOHNSTON, K., Contact ulcer of the larynx. *J. Amer. med. Assn.*, 168, 1960, 511-515.

The etiology, pathology, and treatment of contact ulcer of the larynx were studied in 92 patients whose ages ranged from 28 to 72 years. The ratio of males to females was 84 to 8. The contact ulcer, an ulceration of the approximating surfaces of the arytenoid cartilages, was most often produced by vocal strain of shouting against noise or talking under other adverse conditions. Therapy began with voice rest and elimination of oral infection; also vocal re-education and surgery are discussed. *(E.H.N.)*

306. JESCHEK, J., Das schwingungsverhalten der stimmbänder bei lähmung in paramedian- und intermediärstellung. (Movements of the vocal cords in paramedian and intermediate paralysis.) *Z. Laryngol. Rhinol. Otol.*, Stuttgart, 38, 1959, 346-355.

The characteristic abnormalities of paramedian and intermediate vocal cord paralyses are illustrated by records collected over the years with an electronic stroboscope and the high speed camera. The abnormal movements of the cords are detemined by altered aerodynamic conditions, differences in tension, and the absence of active muscular antagonists in the vocal cord. *(Excerpta Medica, XI)*

307. KÖNIG, E., Die operative behandlung der doppelseitigen posticusparese [medianstellung beider stimmbänder]. (Surgical treatment of bilateral abductor paresis [median position of both vocal cords].) *Pract. oto-rhino-laryngol.*, Basel, 21, 1959, 249-253.

It is possible to regain a resonant voice by removing one of the cord muscles together with the arytenoid cartilage and later performing a cross implantation. The voice will have a better chance of recovery if scar formation as a result of interference with the external neck muscles, particularly the sternothyroid and cricothyroid muscles, can be avoided. For bilateral abductor paresis the surgical method of choice may thus be an operation to enlarge the lumen of the glottis (avoiding complete fixation between the arytenoid and thyroid cartilages which would result in fixation between cricoid and thyroid cartilage, thus interfering with muscle function and therefore phonation) followed by a subsequent cross-implantation operation. *(Excerpta Medica, XIX)*

308. LUCHSINGER, R., Die vererbung von sprach- und stimmstörungen. (Inheritance of disturbances of language and voice.) *Folia phoniat.*, Basel, 11, 1959, 7-64.

In a survey of the inheritance of voice and language, and their disorders, the author deals with such hereditary components as fine motor control, intelligence, and mode of language development, as affecting both voice type and pathological reactions. Case histories of families and twins enable a type to be distinguished showing a hereditary language weakness. This embraces inherited cases not only of retarded language development, general dyslalia, and agrammatism, but also of cluttering and clutter-stammering. In speech and voice therapy, as in other fields, it is not easy to separate heredity clearly from environmental factors. However, modern methods enable us to differentiate stammering better, and in many cases a hereditary disposition can be regarded as established. In one group of patients, however, tonic speech disturbances are produced by the combination of an abnormal psychic disposition with a pathological speech mechanism resulting from exogenous brain damage. Little has been

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known hitherto about the hereditable diseases of the larynx which produce voice disorders. *(Excerpta Medica, XI)*

309. NESSEL, E., Die atemstossmessung bei der rhinolalia aperta. (The measurement of respiratory impulses in rhinolalia aperta.) *Med. Klin.*, 54, 1959, 1270-1272.

Pneumoergometry demands a normal condition of the soft palate for measuring respiratory impulses. The degree of organic or functional insufficiency of the soft palate can, however, be established in a reliable manner by the difference in values of the respiratory impulses with open and closed nose (pressure of the finger on the nostrils). The only other objective way of establishing this degree is by means of the 'Nasendurchschlag' (pressure or volume determination). The fitness of the technique for logopedic practice is shown in a case of myasthenia gravis pseudoparalytica limited to the soft palate. *(Excerpta Medica, XI)*

310. PFAU, W., Untersuchungsergebnisse bei recurrensparesen. (The results of investigations into pareses of the recurrent laryngeal nerve.) *H. N. O.*, Berlin, 7, 1958, 144-146.

In 24 patients with pareses of the recurrent laryngeal nerve due to various causes the quality of the voice, vocal register in speech, voice volume, phonation period, and vibration of the vocal folds were examined. In good glottis closure there is a good speech voice and the neutral position is normal in most cases. In insufficient closure of the vocal folds the inclination exists to raise the voice during speech, in order to obtain a better closure of the vocal folds by increased tension. The voice volume was below the lower limit except in two patients, and the phonation period was also below normal, because the necessary tension and a sufficient closure of the vocal folds were not reached. Simultaneous bilateral vibration and a good closure of the vocal folds were always joined to a longer phonation period. In 20 patients simultaneous bilateral vibration was observed stroboscopically, though one vocal fold was undoubtedly paralyzed. This vibration was absent in only four patients, because through abduction of strong excavation contact with the other vocal fold was impossible. In one case vibration of the right vestibular ligament with the left vocal fold was observed. These observations contradict Husson's theory and show the myoelastic theory to be completely valid. Vocal exercise treatment leads to an improvement of the voice function in all cases and should always be tried, whereas treatment with the faradic current above has no prospect of success. *(Excerpta Medica, XI)*

311. SEDLÁČKOVÁ, E., Les dysphonies hypercinétiques des enfants, causées par surmenage vocal. (Hyperkinetic dysphonia in children caused by vocal abuse.) *Folia phoniat.*, Basel, 12, 1960, 48-60.

The study of hyperkinetic dysphonia in children shows that organic changes in the vocal folds are caused by mechanical irritation resulting from vocal abuse. The greatest thickening of the folds occurs in the center. This localization differentiates the condition from singer's nodes which are found in the anterior third. Infantile hoarseness often disappears at puberty, but it can occasion permanent voice changes by producing muscle lesions or by producing a lesion of the vocal ligament. It is necessary to keep careful watch on children's vocal functions and to intervene in time to prevent irreversible voice changes. *(J.B.R.)*

312. SONNINEN, A., Laryngeal signs and symptoms of goitre. *Folia phoniat.*, Basel, 12, 1960, 41-47.

A series of goitre, 131 cases, are studied. Two groups (22 cases of true tracheal *compression* without thyrotoxicosis and 23 cases of true *toxicosis* withou compression) are considered most important. Statistically significant laryngeal symptoms, husky, rough, or cracked speaking voice, and signs of goitre are chiefly limited to the compression group. Toxicosis gives rise to general symptoms. The mode of action of compression on the phonatory mechanism is discussed. *(J.B.R.)*

GENERAL

313. ALLERHAND, M. E., Psychological assessment of the nonverbal child. *Monogr. Soc. Res. Child Develpmt*, 25, 1960, 49-57.

The author states that the psychological

evaluation of the nonverbal child is basically no different from the evaluation of any child. There is a decrease in emphasis on isolated testing and an increasing emphasis on understanding the total functioning of the child. This emphasis then calls for adapting the techniques to the child rather than vice versa. Three ways of obtaining vital information for understanding the whole child are by (1) parental reports, (2) observations, and (3) testing. Two main purposes are involved in obtaining information from parents. The one is to determine how the child has developed and the other has to do with obtaining information as to how the child might be reached during the clinical situation. It is important after getting the developmental data to compare it with normative data as reported by Gesell and Ilg, Piaget, etc. Reduction of anxiety on the part of the child can be brought about by parents who suggest to the clinician those methods which have previously proven successful in reaching the child. It is important for the examiner to be flexible in the test situation for what is lost in objectivity of testing is made up in the extent to which the child reveals himself. Observations should include physical build, attire, manner in which he enters testing office, ease with which he leaves parents, interaction between child and parent, his initial approach to objects, body posture, manner of locomotion, eye contact, general mood, signs of comfort or anxiety, etc. Nonverbal tests which are useful in testing the nonverbal child are, Arthur Point Scale of Performance, Revision II, Bender Visual-Motor Gestalt Test, Chicago Non-Verbal Examination, Columbia Mental Maturity Scale, The Figure Drawing Test, Lowenfeld's Mosiac Test, The Merrill-Palmer Pre-School Performance Test, Raven Progressive Matrices, Stanford-Binet Form L or M, Wechsler Intelligence Scale for Children. There is a danger in oversimplification by attempting to show the intelligence of a child with a single value. Sievers has made an attempt to measure eighteen facilities of language in her test. Scatter in performance test results is important to examine closely rather than single sub-test scores. Pooling of views of a number of persons seems to be more rewarding in terms of understanding the nonverbal child than does attempt to rigidly abide by test results. *(H.J.O.)*

314. BLACK, M. E., Speech correction in the U.S.S.R. *J. speech hearing Dis.*, 25, 1960, 3-7.

The author's discussion of the work done in the U.S.S.R. for handicapped children, particularly in speech correction, is based upon her visit to the Institute of Defectology in Moscow, and a translation of PAY, A., and SIROTKINA, M.M. (eds.), *My experience in Logoped Work*. Moscow, U.S.S.R.: Academy of Education, Institute of Defectology, 1955. Three ministries handle these children: the Ministry of Social Security, for those needing custodial care; the Ministry of Health, for those whose prime problems are medical, and the Ministry of Education, for those of varying educability. Speech rehabilitation is the responsibility of the Ministry of Education, although a speech handicap is considered a medical problem. The 'logoped' (school correctionist) is trained in speech correction departments in institutes for teachers of exceptional children, and receives 25 per cent more pay than teachers of normal children. Clinical organization, reports, parent cooperation, consultation with other specialists, and classroom integration are similar to those in the U. S. The author notes therapy procedures discussed in the book mentioned, after which she comments on similarities and differences between U. S. and U.S.S.R. approaches. She is favorably impressed by the positive approach to speech problems in Russia. *(S.I.G.)*

315. BORTNER, M., and BIRCH, H., Perceptual and perceptual-motor dissociation in brain-damaged patients. *J. nerv. ment. Dis.*, 130, 1960, 49-53.

This investigation tested whether failure in block design reproduction resulted from inability to perceive the model or a disturbance at another level of functioning, i.e., an apraxia. The block design subtest of the Wechsler Bellevue Intelligence Scale I was administered to 10 left hemiplegics, 10 right hemiplegics and 10 patients with no c.n.s. pathology. Results indicated that the inability of brain injured to reproduce designs is not based upon an inability to perceive accurately, but rather involves an inability to translate a percept into an ap-

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propriately organized pattern of acts. There was also no systematic relationship between the I.Q. of the patient and the discrepancy between his ablity to perceive designs and his ability to reproduce them accurately. *(E.H.N.)*

316. CHISTOVITCH, L. A., ALIAKRINSKII, B. A., and ABULIAN, V. A., Vremennyie zaderzhki pri povtorenii slyshimoi rechi. (Time delays in speech repetition.) *Voprosy psikhol.*, Moscow, 6, 1960, 114-120.

Studied were time delays in speech repetition. In the experiments described two speech processes were simultaneously plotted: the input process (signals received by the subject), and the output process (signals produced by the subject). Time delays between the output and input signals were measured. Two types of speech repetition were discovered. The one defined by the subject as repetition 'with understanding' was distinguished by long time delays (in excess of 300 msec) and the absence of errors in the repetition of isolated sounds and syllables. The other type, repetition 'without understanding,' was distinguished by short time delays (150 to 250 msec) and a certain amount of errors (about 10 per cent). *(Authors' summary)*

317. ERNEST, S., Speech therapy in Europe. *West. Speech*, 24, 1960, 93-101.

This is a report of a personal tour of speech correction, hearing, and cerebral palsy centers in 10 European countries. Responsibility for speech and hearing therapy varies from country to country. All but three of the countries have some form of national provision for the speech handicapped, but among these seven countries there are several different administrative plans in force. Training of the therapists also varies widely from country to country. In almost all European countries, training is longer than the minimum required in most places in the U.S. The environment in which therapy is conducted is often different from that typically seen in this country. There is a tendency in many parts of Europe to send speech cases to special schools. One of the greatest differences between European and U.S. speech therapy is in the type of initial evaluation done. In England, for example, long-term observation appears to be favored over batteries of diagnostic tests. Children and their parents are seen for several days while the diagnosis is being made. In contrast again to this country, little time is generally spent in speech stimulation activities or with motivational devices. *(H.L.L.)*

318. GLORIG, A., Prevention of hearing loss. *Hearing News*, 28(1), 1960, 7-10.

The author discusses the incidence and the causes of hearing loss. He dichotomizes etiologies under the headings 'hereditary' and 'toxic.' For the prevention of congenital hearing loss he suggests the following: no marriage, or sterilization where one or both parents possess congenital deafness; exposure of all young girls to German measles and other similar diseases; and therapeutic abortion where disease manifested in the early months of pregnancy might result in hearing loss in the offspring. The prevention of acquired hearing loss he describes as a twofold problem: education and treatment. Personal hygiene, physical examination, and early treatment are stressed. The prevention of primary disease by immunization and the prevention of secondary complications by medical care are important. The author discusses the aspect of noise and the problem of noise control and ear protection. He summarizes by describing the preventive goals as: (1) education of doctors, parents, teachers, management, and labor; (2) control of hereditary defects, prenatal diseases, infectious diseases, obstructive pathology, acoustic trauma, and noise exposure; and (3) early detection by adequate screening, testing and follow-up. *(D.A.H.)*

319. HAHN, E., Communication in the therapy session: a point of view. *J. speech hearing Dis.*, 25, 1960, 18-23.

The author stresses the communicative nature of speech, i.e., its use to express ideas and feelings, and to produce an effect on the auditor. She asks that the socialized aspects of speech therapy be recognized and not sacrificed to the game approach. Each therapy session should (1) motivate the individual to desire to communicate his ideas and feelings, (2) enable him to discover better ways of communication than his present ones, (3) show him to speak more effectively, and (4) provide oppor-

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tunity for use of improved speech in self-motivated communication. The author suggests that speech correction activities should center around the child's communication of his own spontaneous ideas in phrases. She feels that too frequently an analytical 'part-process approach' utilizing single sounds in therapist-invented speech responses is used. Materials for therapy sessions are whatever activities suggest comments, questions, conversation, from clay modeling, to playing store, to classroom and school activities. *(S.I.G.)*

320. HOCHBAUM, G. M., Modern theories of communication. *Children*, 7, 1960, 13-18.

The need for successful educational communication with specific population groups and the public at large is emphasized. The article focuses on principles of behavioral science and their implications for effective communication. The conclusion is that attempts to educate the public should utilize all kinds of available facilities, and all theoretical and practical knowledge available concerning communication and learning processes while allowing every individual and group to adopt messages and teaching to their own needs, motives, and customary ways of dealing with their problems of life. *(N.J.C.)*

321. HUNT, B. M., Differential responses of mentally deficient brain-injured children and mentally deficient familial children to meaningful auditory material. *Amer. J. ment. Def.*, 64, 1960, 747-753.

This is an exploratory study concerning the abilities of three groups of mentally deficient children to comprehend and reproduce information from meaningful auditory material as presented on records. Groups are differentiated on the basis of etiology, two groups being brain damaged. A second aspect of the study concerns the performances of mentally deficient brain-injured children who, in spite of no obvious hearing loss, are classified on the basis of observable classroom behavior as having severe difficulties in comprehension and reproduction of auditory material. The following three hypotheses are advanced: (1) Mentally deficient brain injured children described as having minimal disabilities in auditory perception and reproduction will not obtain higher scores to a significant point than mentally deficient brain-injured children described as having severe difficulties with auditory perception and reproduction. (2) Mentally deficient children diagnosed as familial will not receive higher scores than mentally deficient brain-injured children described as having severe difficulties with auditory perception and reproduction. (3) Mentally deficient brain-injured children diagnosed as having minimal disabilities in auditory perception and reproduction will not obtain higher scores to a significant point than mentally deficient children classified as familial. Subjects were sixty mentally deficient children divided into three groups as follows: (a) twenty mentally deficient children diagnosed as familial, (b) twenty mentally deficient children diagnosed as brain-injured and described as having severe auditory disabilities without sensory hearing loss, and (c) twenty mentally deficient children diagnosed as brain-injured and described as having minimal auditory disabilities without sensory hearing loss. The severe disabilities of this group were in other sensory fields. The three groups were matched on the basis of chronological age, mental age, and intelligence quotient as determined by the Stanford-Binet Intelligence Test. Five short storybook type phonograph records were divided into short units for presentation to the subjects. Each subject was asked comprehensive questions after hearing material included within the unit. Results obtained allow for rejection of hypothesis 1 and hypothesis 2. Hypothesis 3 is not rejected. Performances of the three groups seemed positively related to mental age and I. Q., but not related to chronological age. Types of responses showed mentally defective brain-injured children with severe auditory disabilities as giving the most nonsensical responses. The suggestion is made that trying to categorize and formulate a picture of the typical brain-injured child is futile. Also the feasibility of differential teaching methods based on identification and classification according to specific learning abilities is suggested. *(N.J.C.)*

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322. ISAACS, W., THOMAS, J., and GOLDIAMOND, I., Application of operant conditioning to reinstate verbal behavior in psychotics. *J. speech hearing Dis.*, 25, 1960, 8-12.

Operant conditioning signifies controlling behavior by explicitly arranging the consequences of the response, the explicit consequence being termed reinforcement. For example, a lever-press by a rat releases food. When hungry, the rat's lever-pressing responses increase in frequency. If the relationship between response and food holds only when a light is on, the organism may discriminate between light on and light off, pressing the lever only when the light is on. Control of schedules of reinforcement has been applied recently to studies in conditioning cooperative behavior in children, programming machines which teach academic subjects, analyzing effects of noise on human behavior, decreasing stuttering, etc. This article is a preliminary report of the use of operant conditioning to reinstate verbal behavior in two hospitalized mute psychotics. The similarities between the pattern of reacquisition of verbal behavior by the patients and the patterns of learning encountered in laboratory studies suggest that the conditioning procedures themselves were involved in the reinstatement of verbal behavior. The authors conclude that normal behavior probability can be increased by decreasing probability of abnormal behaviors, or abnormal behaviors can be decreased by the controlled increase of normal behaviors. They suggest that the latter approach, increasing the probability of what normal behaviors the psychotic possesses, is worth further investigation. *(S.I.G.)*

323. JOHNSON, J. N., A Bell bibliography. *Volta Rev.*, 62, 1960, 111-112, 139.

March 3, 1960, marks the 113th anniversary of the birth of Alexander Graham Bell. The article is divided into two sections, books by Alexander Graham Bell and books about Alexander Graham Bell. They cover the areas of education of deaf children, preparedness for aerial defense, the metric system and the mechanism of speech. The bibiography does not include all, but does include many, of the published works by and about Dr. Bell. *(J.M.)*

324. JOHNSON, W., The role of communication in human behavior; speech and hearing problems. *Rehab. Rec.* 1, 1960, 3.-35.

With an estimated three to eight million persons in the United States affected by serious communication disorders, the need for additional speech clinicians and audiologists is staggering. The author lists briefly the various types of speech and hearing problems encountered in both children and adults, the services presently available, and the need for expanding training facilities. More detailed information is available in a recently published special report of the American Speech and Hearing Association. *(Rehab. Lit.)*

325. KOPP, G., Bridging the gap. *J. speech hearing Dis.*, 25, 1960, 70-76.

This article was presented as the presidential address to the American Speech and Hearing Association at the 1959 convention. The author defines operationally what he feels ASHA members do, how they do it, what knowledge and materials they use in achieving their goals, and in what places they obtain and utilize this knowledge. The author calls for unambiguous designations, certification, identification, and a Code of Ethics appropriate to each of the varied interests and tasks among the now more than 5000 members of the Association. He stresses the need for an agreed upon set of values that will give the status necessary for effective clinical-educational research approaches to aiding the speech and hearing handicapped. Members are urged to make their greatest consideration that of the direction in which they are going. *(S.I.G.)*

326. MACLAY, D. T., MASON, S. E., and STEIN, L., Speech therapy and child guidance in correspondence. *Brit. med. J.*, London, 1, 1960, 1054.

Speech therapists need to work with Child Guidance teams for training in play therapy to cope with emotional problems of children with psychogenic speech disorders. British speech therapists now receive inadequate training and/or recognition for such psychotherapy. *(J.C.S)*

327. MASLAND, R. L., Research progress in hearing disorders. *Hearing News*, 28(2), 1960, 7-10.

The scope of the program of basic and applied research in hearing by the National Institute of Neurological Diseases and Blindness (NINDB) is described. Research is presently being conducted throughout the nation under grants from NINDB. Research is in progress on the effect of drugs on hearing, the effect of certain surgical procedures, and the effect of birth factors. Also under way are investigations of hereditary factors in association with hearing abnormality. Specific hearing tests are being evaluated, as are methods of training the deaf. A national survey of hearing problems in children is being partially supported by NINDB. An important area of research deals with neural pathways and the actual regulation of hearing acuity by the higher centers. NINDB has also supported and encouraged several conferences dealing with hearing problems. In addition to the wide scope of research being supported, the need for further research in specific areas is noted, as is the need for more research and teaching personnel. *(D.A.H.)*

328. MASSENGILL, R., Jr., Deafness and equilibrium. *Volta Rev.*, 62, 1960, 71, 93.

In a study of equilibrium in athletes of the Tennessee School for the Deaf, a questionnaire was sent out to the coaches as well as members of the teams of their opponents regarding their attitude toward the equilibrium and coordination of boys who were deaf. A total of 72 were filled out by varsity high school basketball players and 15 by coaches of hearing teams who had played against the school for the deaf team. Twelve of the coaches noticed that the basketball players in the school for the deaf had trouble with their coordination. Three did not notice any difference. Forty-seven of the varsity players noticed a difference in the deaf boys' coordination while 25 did not. It was also noted that in the past five seasons the players for the Tennessee School for the Deaf missed a larger percentage of their free throws and had committed more fouls than their hearing opponents. Hunskier's Ashper Youth Fitness Test was also administered to the players. On this test the deaf players did well and results showed they were as physically fit as hearing boys of their own age. It appeared that equilibrium plays an important role in basketball players' ability to function well and that the deaf basketball players in this study showed signs of poor balance in certain situations. *(J.M.)*

329. MATTHEWS, J., EVERSON, R., and BURGI, E., Effects of isoniazid on the speech of multiple sclerosis patients. *J. speech hearing Dis.*, 25, 1960, 38-42.

The research project described involves ratings of two samples of recorded speech of each of 22 Veterans Administration hospital patients diagnosed as having multiple sclerosis. All of the patients were recorded initially prior to administration of placebos to 10, and isoniazid to 12, and again, after three months or more of the prescribed therapy. A single tape was then made on which the order of occurrence of pre-post or post-pre recording was randomly determined. This tape was then played to 42 listeners, students and graduate assistants in speech and hearing disorders at the University of Pittsburgh, who were to compare the first sample of each individual with his second sample. A five point rating scale was used: a great deal worse, a little worse, the same, a little better, a great deal better. The results indicated that there was no significant difference between the two groups as far as speech was concerned. It was concluded that isoniazid did not improve the speech of the subjects in this study. *(S.I.G.)*

330. RAPH, J. B., Determinants of motivation in speech therapy. *J. speech hearing Dis.*, 25, 1960, 13-17.

The purpose of this article is to shift focus from a teacher-centered orientation of motivation to a consideration of certain values and attitudes present in a child's motivation for learning. Motivation is viewed as being based upon values and attitudes learned from early life experiences. These values and attitudes are largely unresponsive to manipulation or change by formal instruction, and can restrict a child's capacity to change his speech regardless of the teacher's methods or encouragement. Investigation of certain non-academic deter-

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minants of achievement reveal that the child's drive toward achievement of a certain purpose is partially non-volitional, and not completely conscious. It is suggested, therefore, than an obligation is placed upon the clinician to understand as much as possible the child's situation, and not to blame lack of progress on the child or the teacher, or lack of effort. Instead, attempts should be made to account for the child's effort or lack of it. Speech should be viewed in relation to the child's total drive to achieve satisfaction and security. This view requires background in developmental psychology, sensitivity, and willingness to learn as much as possible about the child's emotional functioning. *(S.I.G.)*

331. SHWARTS, L. A., Uslovnyie refleksy na slovesnyie razdrazhenia. (Conditioned responses to verbal stimuli.) *Voprosy psikhol.*, Moscow, 6, 1960, 86-98.

The procedure used by the author involved the replacement of conditioned verbal stimuli with words similar to them in pronunciation but different in meaning or similar in meaning but different in pronunciation (synonyms). The experiments have indicated that a broad generalization of conditioned verbal stimuli takes place. It has been proved that conditioned connections between verbal stimuli which are similar only in pronunciation easily die out. At the same time in our experiments the conditioned connections between synonyms did not disappear. The use of a cortical sedative (chlorale hydrate) weakened the conditioned response to the verbal stimulus synonyms and disinhibited the conditioned response to words similar with the verbal stimulus in pronunciation, which had already died out. *(Author's summary)*

332. SORTINI, A. J., To the parents of the hearing handicapped child. *Volta Rev.*, 62, 1960, 26-28, 46.

This article consists of a letter designed to inform parents about their children's hearing problems. The letter is used at the Children's Medical Center in Boston. The author feels that information presented in this form can be taken home, studied, and assimilated by the parents after they recover from the initial shock of learning their child has a hearing problem. Information is provided explaining the audiogram and the values and limitations of hearing aids. Problems of special education, mental ability, and the role of the parents are discussed. *(J.M.)*

333. TAYLOR, W., and TAYLOR, I., The education of physically handicapped children in France. *Except. Child.*, 26, 1959, 78-81.

Brief descriptions of the incidence and treatment of deaf, hard of hearing, speech defective, cerebral palsied, and other handicapped children are presented. *(E.H.N.)*

334. TAYLOR, W., and TAYLOR, I., The education of physically handicapped children in Switzerland. *Except. Child.*, 26, 1959, 208-209.

This is the last of a series of six articles regarding the incidence and treatment of handicapped children in a particular country. Information on incidence and treatment of the deaf, hard of hearing, speech defective, etc. are given. *(E.H.N.)*

335. TENNY, J. W., Special education in the Soviet Union. *Except. Child.*, 26, 1960, 296-304.

During a five-week tour of Russia sponsored by the Comparative Education Society of the United States, the author observed special education facilities and provisions in the Soviet Union. Social and political influences on education, the level of general education, and unique aspects of special education provisions are discussed. Segregation of the atypical child is an almost universal practice in Russia and continues into adult life. Suggestions for improving special education programs in America are offered in conclusion. Similar articles by the author and other educators, members of the tour, were annotated in *Rehab. Lit.*, Mar., 1959, #274 and Dec. 1959, #911. *(Rehab. Lit.)*

336. WALLEN, J. E. W., Sheltered workshops for older adolescent and adult mental retardates. *Train. Sch. Bull.*, 56, 1960, 111-121.

An historical account of sheltered workshops is presented. Types, inspection, and evaluation of workshops, and reasons for specific workshops for the mentally retarded are reported. One of the goals of a sheltered workshop is to develop all possible

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communication or language skills. The correction of speech defects such as lisping, lalling, cluttering, mumbling, nasality, monotones, and stuttering is advocated. The use of tongue and lip exercises, establishment of correct breathing habits, and application of mental hygiene and psycho-therapeutic techniques is suggested. Extensive practice motivated by creation of felt needs in all phases of the rehabilitation program helps overcome 'drudgery' involved in obtaining speech proficiency. Results of speech improvement programs vary according to type, severity, causation of disorder, general level of intelligence, physical and mental complications, and degree of motivation. Little improvement is shown in some cases after months of skilled speech therapy; noticeable improvement is shown in other cases. A few are capable of complete correction. All except the lowest group should be afforded opportunities for speech development under effective motivation. *(N.J.C.)*

Graduate Theses in Deafness, Speech, and Hearing, 1958

FRANKLIN H. KNOWER

Graduate schools of 47 colleges and universities in the United States reported 172 thesis titles in the areas of deafness, speech, and hearing in 1958. Of these, three were for bachelor's degrees, 120 were for master's degrees, and 49 were for doctor's degrees. These 172 titles are listed below in two ways. First they are given by schools, then by subject matter. In the first listing, the schools are arranged alphabetically by the distinguishing word in their titles; under each school the theses are alphabetized by the names of the authors. In this listing, each title is assigned a number. Second, the numbers are used to designate the titles in the subject index; asterisks indicate doctoral dissertations. Many titles are indexed in more than one area of subject matter.

Titles

University of Arizona

M.A. Thesis

1. Brackett, Griffith B. Adapting the conditioned eyeblink hearing test to the clinical situation.

Baylor University

M.A. Theses

2. Malcik, Ellen L. Roberts. Voice change in adolescent Negro males.
3. Thompson, Carl L. An evaluation of the reliability and validity of a group pure tone hearing test.

Boston University

M.Ed. Theses

4. Arnold, Margery Eleanor. Teacher conducted speech and hearing survey of the Portsmouth, New Hampshire, public elementary schools.
5. Dickstein, Joan. An analysis of attitudes of acceptance-rejection toward exceptional school children.
6. Dripps, Elaine. An analysis of attitudes of acceptance-rejection toward exceptional school children.
7. Evers, John A. A history of the founding and development of the Horace Mann School for the Deaf 1869-1958.
8. Hoar, Ann Louise. A handbook of materials for use in speech therapy with cerebral palsied children.
9. Jervis, Patricia J. A study of the growth in speech sound discrimination ability of kindergarten children.
10. Mahon, Florence Lucy. A word list for articulation testing and referral consisting of first grade vocabulary in speech problem areas arranged according to frequency of use and classified by speech sounds.
11. Ramanow, Carol. A phonetic analysis of the articulation of 20 children of Italian descent.
12. Richmond, Cynthia A. An exploratory study of the speech of ten autistic children.

D.Ed. Theses

13. Farquhar, Mary Stuart. The predictive values of a battery of imitative articulation and auditory discrimination tests in the speech development of kindergarten children.
14. Pfeifer, Rosemary Consavage. An experimental analysis of individual and group speech therapy with educable institutionalized mentally retarded children.

Bowling Green State University

M.S. Thesis

15. Shaski, Margot. A comparative sound analysis of certain vowels as produced by esophageal and normal speakers.

Brooklyn College

M.A. Theses

16. Ganz, Elinor C. An evaluation of singing as a technique in speech therapy.
17. Harrison, Norma. Differential diagnosis of aphasia in children.
18. LaHuta, Leff. A study of the relationship between certain personality traits and listener reactions to stuttering.
19. Martin, Frederick N. The effect of selective amplification of speech perception.
20. Ross, Mark. The clinical use of pure tones in a sound field.
21. Schlitt, Robert. Socio-economic status as a correlate of speech defects.

Catholic University of America

M.A. Theses

22. Fidelis, Mother Mary. An application to speech therapy of the concept of virtue according to St. Thomas Aquinas.
23. Voshing, Father Thomas W. An analysis of the need for and recommendations for a speech correction program in the minor seminaries.

Columbia University-Teachers College

Ed.D. Thesis

24. Johnson, Alice. Organization and administration of a speech unit in a private general hospital rehabilitation program.

University of Denver

M.A. Thesis

25. Welch, Elizabeth Ann. An investigation of the etiologies of hearing losses in children under six years of age in a university hearing clinic.

Ph.D. Theses

26. Bartl, Charles. An investigation into the physiological differential of certain speech personality traits.
27. Bell, Dorothy Mays. Methods of teaching speech and language to the severely mentally retarded child.
28. Lahaie, Ralph Vernon. An investigation of certain physiological reactivities to "allness" terminology.
29. Shearer, William M. An experimental investigation of auditory threshold for affectively toned words.

Emerson College

M.A. Theses

30. Allen, Joan. Integration of differential diagnosis and principles of speech habilitation for the cerebral palsied child with malcommunication.
31. Gilstein, Lillian Claire. The construction and use of personalized audio-visual aids in the correction of minor articulatory problems.
32. Donelson, Ruth Ann. The value of a unit of work in the teaching of language and reading to the deaf child.

Florida State University

M.A. Thesis

33. King, Thomas Roy. The relationship between visible manifestations of stage fright and reports by the individual.

B.S. Theses

34. Faircloth, Samuel R., Jr. A study of 133 speech deficient college students.
35. Stevens, Douglas A. The effectiveness of a method of hearing screening.
36. Vaughn, Avery Ole. The speech understandability of 102 educable cerebral palsied adults.

Ph.D. Thesis

37. Clevenger, Theodore, Jr. An analysis of variance of the relationship of experienced stage fright to selected psychometric inventories.

University of Hawaii

M.A. Theses

38. Black, A. Duane. An investigation of judgments of intelligence and personality based on voice, appearance, and speaking before a group.
39. Heyer, Pansy Hicks. A study of a method for facilitating the teaching of speech improvement at the high school level in Hawaii.
40. Prachanboribal, Boonpriab. A study of difficulties of Thai students in pronouncing English consonant clusters.

University of Houston

M.A. Thesis

41. Caillet, Paul Rene. A follow up study of fifty stutterers who were diagnosed at a speech clinic before the age of eight.

University of Illinois

Ph.D. Theses

42. Fay, Thomas Holland. An experimental study of the intelligibility of alphabet letters.
43. Holbrook, Anthony. An exploratory study of diphthong formants.

Indiana University

M.A. Theses

44. Allison, Richard E. Differential changes in articulation of school children as a function of therapy.
45. Buschor, Jack W. An evaluation of a pure tone hearing test using lights for response signals.
46. Forgnone, Charles. An exploratory study: the relative effects of the disruption of auditory and tactile 'feedback' upon speech performance.
47. Gott, Sylvia Rulff. A longitudinal language analysis of stuttering therapy.
48. Humphrey, William R. A study of the ability to reproduce new sounds which have been presented orally.
49. Mack, James Edward. An evaluation of audiograms by frequencies among 1,343 public school children with hearing deficiencies.
50. Mayfield, Shirley Clark. An investigation of maternal awareness of and reaction to speech development and speech deviation.
51. Meyer, Mary W. Stutterers' and non-stutterers' responses to a speech situation inventory.
52. Romans, Edward F. Effect of latency between stimulation and response on reproduction of sounds.
53. Sayler, Helen Knight. The effect of maturation upon defective articulation in Grades VII-XII.
54. Snow, Katherine. The influence of oral versus pictorial stimulation upon articulation testing results.
55. Thomas, Alice Lucille. The pre- and post-operative language behavior of brain surgery cases.
56. Walnut, Francis Kane. A personality inventory item analysis of individuals who stutter and individuals who have other handicaps.
57. Wilson, Loraine Alta. Articulation of consonants and speech sound discrimination of blind children in the elementary grades.
58. Wright, Herbert. Reliability of evaluations during basic articulation and stimulation testing.

State University of Iowa

M.A. Theses

59. Castle, William Eugene. Examining the oral speech mechanism.
60. Powers, Gene Roy. A study of perceptual nasality in isolated vowels and connected speech of cleft palate speakers.
61. Prather, William Frederick. A study of the influence of language maturity on the correlation between children's average pure tone loss and their speech reception thresholds.
62. Young, Martin Allen. Correlational analysis of speech non-fluencies and rated severity of stuttering.

Ph.D. Theses

63. Dew, Donald. Formant frequency difference limens as a function of fundamental frequency for selected single formant tones.
64. Duffy, Robert Joseph. The vocal pitch characteristics of eleven, thirteen, and fifteen-year-old female speakers.
65. Menzel, Otto John. An investigation into some possible audiometric correlates of auditory discrimination.

Louisiana State University

M.A. Theses

66. Everett, Russell I. The speech of the triracial group composing the community of Clifton, Louisiana.
67. Hopper, Boby Jack. A survey of speech defects of children tested in pre-school clinics in Ascension Parish, Louisiana, from 1952 through 1957.
68. Raulins, Edith Cavell. An evaluation of the hearing conservation programs in the public schools of the Florida parishes of Louisiana.

University of Maryland

M.A. Theses

69. Eble, Carolyn J. An analysis of responses of a receptive aphasic patient to repeated testing situations.
70. Ikeda, Janet A. An investigation of the function of test materials in side-tone research.
71. Masket, Lois J. A comparative study of articulation problems of non-institutionalized and institutionalized mentally retarded children.

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72. Sergeant, Russell L. An investigation of relationships between functional articulation problems and certain aspects of school adjustment.
73. Walker, M. Josephine. An evaluation of the influence of galvanic audiometry on follow-up hearing tests in cases of non-organic hearing loss.

University of Michigan

M.S. Thesis

74. Gustafson, John A. Some factors affecting auditory pure tone thresholds.

Ph.D. Theses

75. Bloom, Jack. Child training and stuttering.
76. Landes, Bernard A. Recruitment measured by automatic audiometry.
77. Sharf, Donald J. The intelligibility of reiterated speech.

University of Minnesota

Ph.D. Thesis

78. Simonson, Walter E. A preliminary experimental study of the effect of speech assignments on the speech fear reported by students in beginning speech classes.

Mississippi Southern College

M.A. Theses

79. Corely, Nova Walker. The measurement of the verbal behavior of children with articulation problems using information theory concepts.
80. Rigdon, Tommie Louise. The relationship of personal and social adjustment, mental ability, and parental attitudes to articulatory problems of pre-school children.

University of Missouri

Ph.D. Theses

81. Kline, Donald Franklin. An experimental study of the frequency of stuttering in relation to certain goal-activity drives in basic human behavior.
82. Trombly, Thelma W. A comparative study of stutterers' levels of aspiration for speech and non-speech performances.

University of Nebraska

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83. Melmar, Philip. The speech characteristics of a selected group of institutionalized mentally retarded children of school age.
84. Sherill, Donald. A study of the incidence of speech and hearing defects in male juvenile delinquents.

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85. Butt, Dolores. The development of a clinical speech reading test for hearing handicapped children of pre-reading level.

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86. Riello, Achille. Articulatory proficiency of the mentally retarded child.

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87. Lent, John Edward. The development of a handbook of organizational and administrative procedures for teachers of speech correction in New York State.

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88. Engel, Dean C. A test of sound discrimination based upon deviations from a local dialect.

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89. Bragg, Vernon Chaplin. Cumulative effects of repeated exposure to high intensity tones upon recovery of auditory sensitivity.
90. Byrne, Margaret C. A study of the speech and language development of a selected group of young athetoid and spastic quadriplegic children.
91. Harford, Earl Raymond, Jr. The effect of loudness recruitment on delayed speech feedback.
92. Rebstock, Eugene E. The development of communication processes in the psychoanalytic interview.
93. Rutherford, David Ross, Jr. Simultaneous electrical stimulation of paired muscles as a diagnostic test of handedness.
94. Spencer, Ellen Marie. An investigation of the maturation of various factors of auditory perception in pre-school children.
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96. Black, Helen Elizabeth. An evaluation of the hearing testing program of the Columbus public schools.
97. Deal, Leo Vilas. Phonetic similarities among stimulus words and alternative responses in two multiple-choice intelligibility tests.
98. Gotro, Douglas Eugene. Parallelistic methods of teaching speech to hearing and deaf children.
99. Grantiz, David Warren. A comparison of the vocal qualities of blind high school students and sighted high school students.
100. Hast, Malcolm Howard. The relative efficiency of a stenographer-typist in noise and with one- and two-channel listening.
101. Jancosek, Elizabeth Gravely. A rating scale technique for the measurement of foreign dialect based upon non-contextual material.
102. Minihan, Helen Rose. The development of a rating-scale technique based upon informal, oral descriptions for measuring foreignisms in American speech.
103. Rampp, Donald Louis. An experimental study of the effects of auditory and auditory-visual stimulation, frequency of stimulation, and latent periods after stimulation upon the speech responses of children with functional articulatory problems.
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108. Baer, Sherwin Hyer. An analysis of the responses in word intelligibility testing.

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109. Puich, Virginia L. A study of the relationship between reaction time of tongue extension and speaking rate.

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110. Pangilinan, Paciencia Balingit. A phonetic comparison of oral English and oral Tagalog.
111. White, Rosalie Mary Muir. The relationship between oral reading rate and the interval of delayed auditory feedback causing maximum disturbance.

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112. Blum, Arthur. The effects of white noise on delayed auditory feedback response.
113. Colvin, Elizabeth J. Relationship between aspiration levels and stage fright.
114. Dressler, Bernice. A study of the prognosticating value of consonant articulation errors in kindergarten and first grade children.
115. Levy, Elizabeth. Some relations between delayed auditory feedback and auditory threshold, obtained in a clinical situation.
116. Rollin, Walter. An analysis of oral responses of aphasics repeated presentations of question items under five different syntactical conditions.

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117. Berlin, Charles I. A study of attitudes toward the non-fluencies of childhood parents of stutterers, parents of articulatory defectives, and parents of normal-speaking children.

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118. Rosenwinkel, Norbert Eilliott. Hearing loss related to industrial noise and measured by a new instrument.

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119. Drexler, Hazel G. The elements of articulation skill: prediction of later ability from a test battery administered in kindergarten.

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120. Drexler, Allan Barry. An investigation of pitch, sound pressure level, and rate in institutionalized mentally retarded adults.
121. Rigrodsky, Seymour. Application of Mowrer's autistic theory to the speech habilitation of mentally retarded pupils.

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122. Sachs, Stanley. The degree of phonetic treatment of vowels, diphthongs, and consonants in the Gregg and Pitman systems of shorthand.
123. Stern, Zina Gold. Language preference of bilingual aphasics as evident in picture naming.

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124. McConnell, Mary Kathleen. The relationship between two measures of articulation deficiency.

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125. Davis, Lawrence. A speech and hearing survey of Indian children attending Ogalala Community School, Pine Ridge, South Dakota.
126. Knittel, Marvin Glenn. An investigation of the relationship between certain attitudes of parents and the articulatory skill in their children.

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127. Redwine, Gerald W. An experimental study of relationships between self-concepts of fourth and eighth grade stuttering and non-stuttering boys.
128. Shopwin, Charles D. An experimental investigation of the passive-dependency component in adult male stutterers.

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129. Heidbreder, Janet. A survey of speech defects in St. Clair County, Illinois, with a comparison of parent teacher, and clinical judgments.
130. Jenkins, F. Terry. Pure tone loss correlated with some aspects of discrimination loss.
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135. Bangs, Lucille Engdahl. A study of threshold crossings in hearing utilizing a Bekesy type audiometer.
136. Chaiklin, Joseph Burton. The conditioned GSR auditory speech threshold and its relationship to selected voluntary auditory speech thresholds.
137. Valentine, Milton Albert. Masking techniques in clinical, pure tone audiometry.
138. Ventry, Ira. Evaluation of one- and two-frequency audiometric screening of children.

Syracuse University

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139. Brown, William. An experimental investigation of the effectiveness of binaural hearing for adults with impaired hearing.
140. Iandoli, Edward. An analysis of the articulatory errors and voice quality characteristics and their relation to speech intelligibility of children with cerebral palsy.
141. Jacobson, Joan. An investigation of the speech and oral language performance of non-institutionalized achieving and non-achieving mentally retarded children.
142. Schaffer, Elliott. A quantitative investigation of judgments concerning some variables of stuttering phenomena in children.

Temple University

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143. Baron, Verna Sandler. A study of parental attitudes to speech non-fluencies in non-stuttering children.

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144. Decherd, Helen Schultz. An investigation of the written vocabulary of second-grade deaf children.
145. Finfrock, Mary Margaret. The efficiency of an abbreviated articulation inventory.

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University of Utah

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147. Bunnell, Edward LeRoy. A survey of speech adequacies of a group of adolescents.
148. Hanson, Marion LaVern. Maternal attitudes on childhood articulatory problems.
149. Larsen, George Lars. The relationship of articulation to open bite.
150. Moore, Paul Caine. A comparison of speech reception thresholds obtained by ascending vs. descending methods of testing.
151. Norrix, James Marion. Language rehabilitation of the brain-injured adult in the United States since 1914.

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152. Fletcher, Samual Glen. Hyper-nasal voice: its relation to growth disturbance and physiological activity.

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155. Stuart, Jane Lansden. An investigation of the responses of 200 normal children on a non-verbal test.
156. Teague, Rebecca Williams. A comparison of pure tone, psychogalvanic, and speech test differences-scores of a group of functional and organic hearing loss adults.
157. White, Georgia Lee. The effects of hearing aid experience on auditory discrimination ability of elderly adults.
158. Williams, Patsy Virginia. A study of written and oral language ability of two groups of hearing impaired children.

University of Virginia

M.A. Thesis

159. Hopper, G. Robert. The treatment of the cerebral palsied in Virginia; an historical and evaluative review of cerebral palsy habilitation in Virginia.

University of Washington

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160. Bennett, Delmond. The incidence of articulatory defects among children with classified dental malocclusions.
161. Tufts, LaRene. An investigation of the effectiveness of parental training as a method of alleviating functional articulation problems in pre-school children.

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162. Boone, Daniel. Variations in communication among 75 hemiplegic adults.
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164. Elpern, Barry. Velocity of traveling waves over segments of cochlear partitions.

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165. Marean, Charles E. A preliminary investigation of the problem of aphasia.
166. Orange, Jaunita. A longitudinal study of speech therapy with a single cerebral palsied child.
167. Pollock, Kenneth C. A study of experimental GSR speech audiometry with aphasics.
168. Rammelt, Karen J. An investigation of the EDR as an indicator of visual word recognition in aphasic subjects.
169. Steigler, Eleanor J. A study of GSRs of adult aphasics subjected to frustration.

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170. Haug, Clarence Olaf. An evaluation of otological and audiological findings in relation to predictability for success in surgical rehabilitation for otosclerosis.
171. Ristow, William L. An analysis of the vocabulary of students in a speech fundamentals course.

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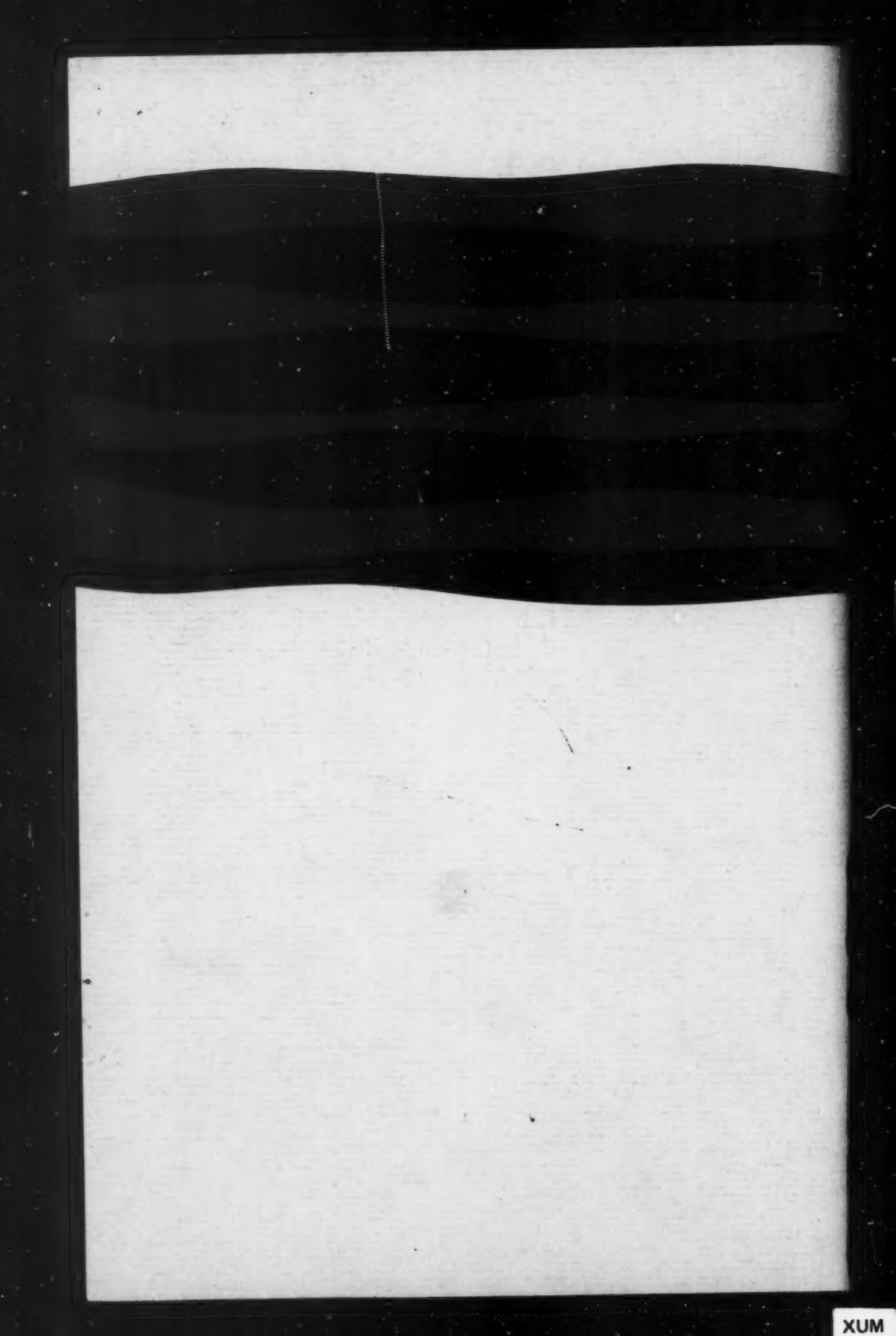

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